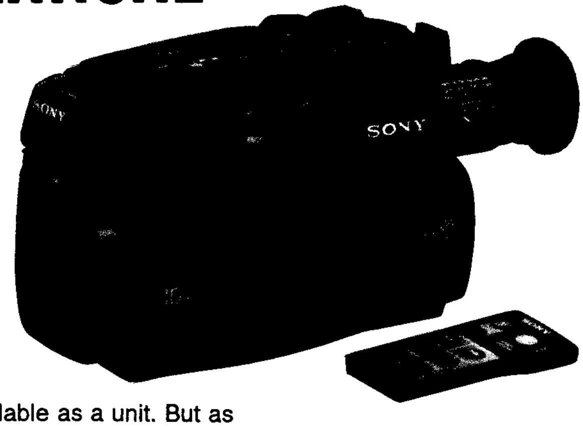
CCD-TR305E
RMT-701

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model
Tourist Model

Video8
Handycam

FL MECHANISM



Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL Ⅱ " (9-972-705-11).

SPECIFICATIONS

System

Video recording system	Four Rotary heads, Helical scanning FM system
Audio recording system	Four Rotary heads, Helical scanning FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette
Tape speed	SP mode: Approx. 20.051 mm (13/16 inch)/second LP mode: Approx. 10.058 mm (13/32 inch)/second
Recording time	SP mode: 1 hour and 30 minutes (P5-90) LP mode: 3 hours (P5-90)
Playback time	SP mode: 1 hour and 30 minutes (E5/P5-90) LP mode: 3 hours (P5-90)
Fast-forward/rewind time	Appros. 8.5 min. (E5/P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 10 × power zoom lens f = 6.2 – 62 mm (1/4 to 2 1/2 inches) F 1.6 (44.6 to 446 mm (1 13/16 to 17 5/8 inches) when converted to a 35-mm still camera) 37 mm (1 1/2 inches)
Autofocus sytem	TTL autofocus sytem inner focus wide macro system
Colour temperature	Automatic
Minimum illumination	3 lx (F 1.6)
Illumination range	3 lx – 100,000 lx (0.3 – 9,920 footcandles)
Recommended illumination	More than 100 lx (9.3 footcandles)

Input and output connector

AEP, UK model

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative
Audio output	Phono jack (2) Output: – 7.5 dBs (at output impedance 47 kilohms) impedance less than 2.2 kilohms

— Continued on next page —

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

E, Australian, Tourist model

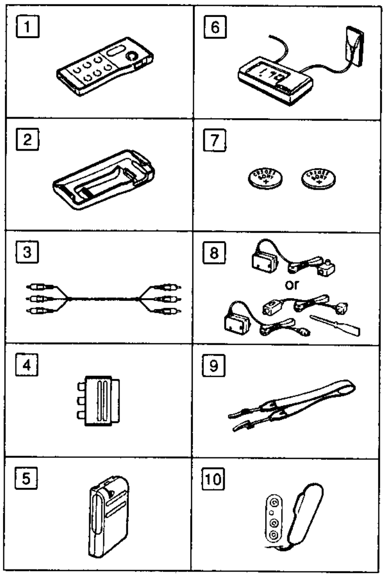
Video input/output	Selectable with IN/OUT selector Phono jack (1), 1 Vp-p, 75 ohms unbalanced sync negative
Audio input/output	Selectable with IN/OUT selector Phono jack (1) Input: –75 dBs, input impedance more than 47 kilohms Output: –75 dBs, (at output impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, DC 5 V
Remote jack	Stereo mini-minijack
MIC jack	Stereo minijack, –66 dBs, low impedance with 2.5–3 V DC output, impedance 6.8 kilohms

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor) 9.0 V (alkaline batteries)
Average power consumption	5.7 W (camera recording) including the viewfinder
Installation	Verically, Horizontally
Operating temperature	0 °C to 40 °C (32° F to 104° F)
Storage temperature	–20 °C to +60 °C (–4° F to +140° F)
Dimensions	Approx. 105 × 99 × 173 mm (w/h/d) (4 1/4 × 4 × 6 7/8 inches)
Weight	Approx. 650 g (1 lb 7 oz) excluding the battery pack, lithium battery, cassette, jack cover, and shoulder strap Approx. 870 g (1 lb 15 oz) including the battery pack NP-55, lithium battery CR2025, cassette P5-90, jack cover, and shoulder strap
Microphone	Electret condenser microphone, stereo type

Supplied accessories

(A)



(A)

1 **Wireless Remote Commander (1)**

2 **Remote Commander holder (1)**

3 **A/V connecting cable (3 phono to 3 phono) (1)**

4 **21-pin adaptor (1)**

5 **Battery pack NP-55 (1)**

6 **AC power adaptor AC-V35 or AC-V35A (1)**

7 **Lithium battery CR2025 (2) (for camcorder/for the Remote Commander)**

8 **RFU adaptor**
RFU-90E (1) (AEP model)
RFU-90AS (1) (Australian model)
RFU-89EA with an aerial selector and a screw driver (1) (UK/E/Tourist model)

9 **Shoulder strap (1)**

10 **Jack cover (1) (attached to the camcorder)**

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

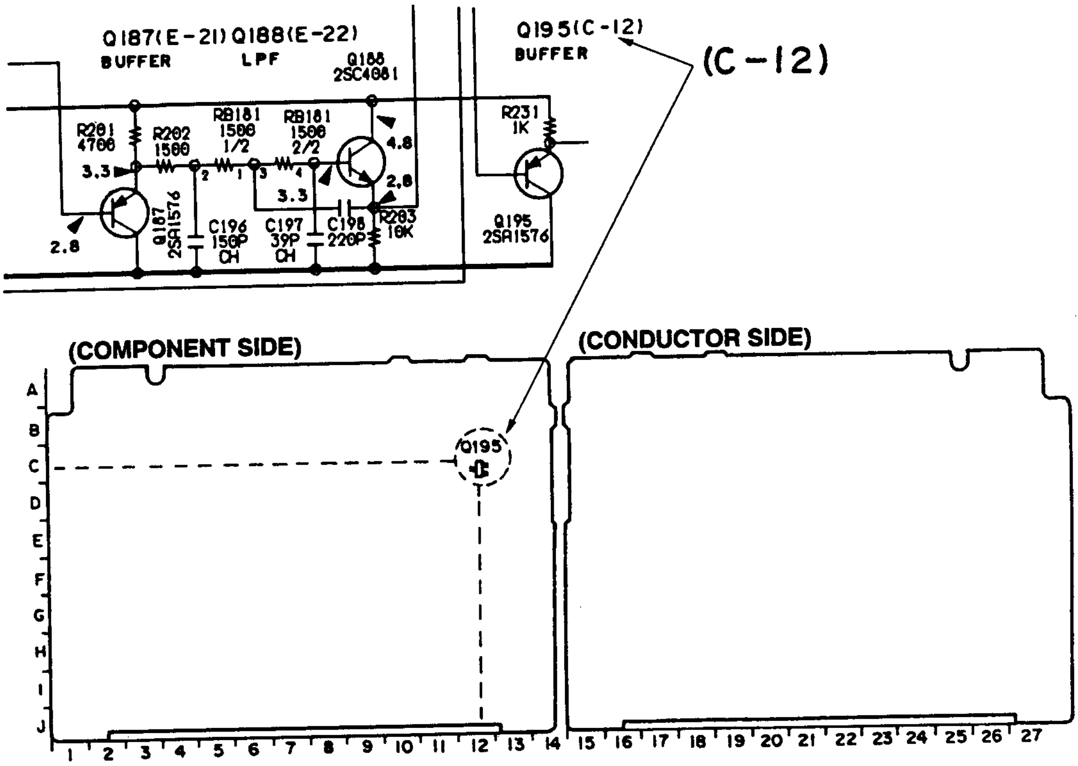
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 108 and 120.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red as shown below. This enables to find the location on the board easily when servicing.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✲] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

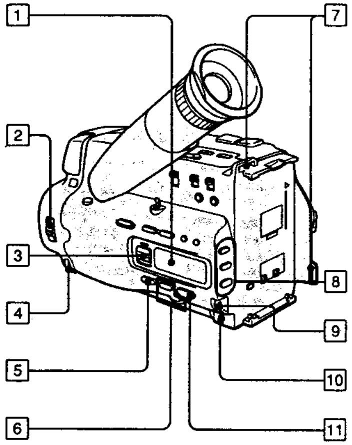
SECTION 1

GENERAL

This section is extracted from instruction manual of AEP/UK model.

Identifying the Parts

(B-1)



For details on the use of each control, refer to the pages indicated in the circle.

(B-1)

1 **Display window ●**

2 **LENS COVER switch ●**

3 **AUTO LOCK switch ●, ●**

4 **FOCUS MANUAL dial ●**

5 **FOCUS button ●**

6 **EXPOSURE button and EXPOSURE dial ●**

7 **Hooks for shoulder strap**

8 **Superimpose buttons ●–●**

MEMORY button
COLOR/MODE button
SUPERIMPOSE ON/OFF button

9 **BATT (battery eject) knob ●**

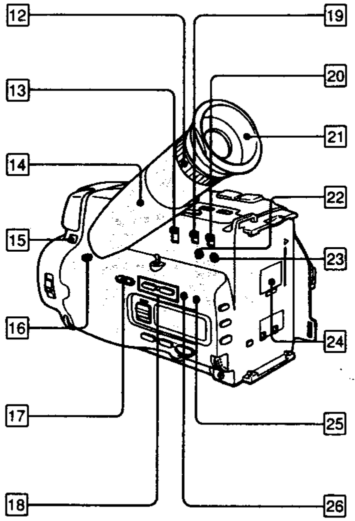
10 **REMOTE ⅃ (LANC)* control jack (stereo mini-mini-jack)**
Connect a wired remote control unit, an editing controller, or other equipment here.

11 **PROGRAM AE button ●**

* **About ⅃ (LANC)**
⅃ (LANC) stands for Local Application Control Bus System. The ⅃ (LANC) connector is used for controlling the tape transport of video equipment and the peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

Identifying the Parts

(B-2)



(B-2)

12 **Viewfinder lens adjustment ring ●**

13 **Hi-Fi SOUND switch ●**

14 **Viewfinder ●**
You can monitor the monochrome picture being recorded or played back.

15 **Remote sensor ●**

16 **PUSH FOCUS HOLD button ●**

17 **DIGITAL PICTURE button ●**

18 **DATE (+) and TIME (NEXT) buttons ●**

19 **REMOTE COMMANDER ▣ ON/OFF switch ●**

20 **REC MODE (recording mode)/EDIT switch ●, ●**

Mode	Recording	Playback	Editing
Setting	REC MODE SP LP	EDIT	EDIT
Function	Recording mode switch	EDIT switch	

21 **Eyecup**

22 **SUMMERTIME button ●**

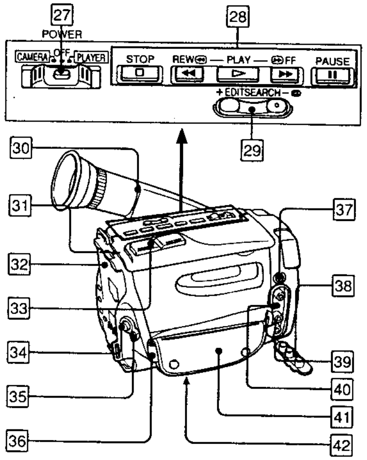
23 **AREA button ●**

24 **Lithium battery compartment ●**

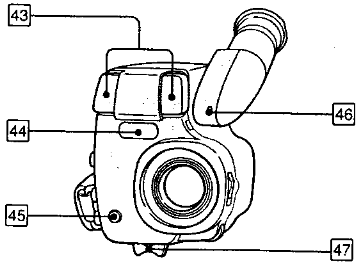
25 **ZERO MEM (zero memory) button ●, ●**

26 **COUNTER RESET button ●**

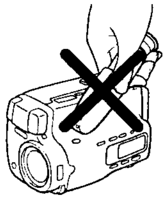
(B-3)



(B-4)



(B-5)



(B-3)

27 **POWER switch**

28 **Tape transport buttons**
- ▷ PLAY (playback)
- ▶▶ FF (fast forward)
- ◀◀ REW (rewind)
- ☐ STOP
- ❚❚ PAUSE

29 **EDITSEARCH ⊜ button ㉖, ㉗**

30 **Camera recording/battery lamp**

31 **EJECT button (below the lid) ㉑**

32 **Battery mounting surface**

33 **Power zoom button ㉕, ㉙**

34 **START/STOP button ㉓**

35 **STANDBY switch ㉓**

36 **Grip strap**

37 **MIC jack (PLUG IN POWER) (stereo minijack**

38 **Jack cover**

39 **VIDEO/AUDIO output jacks (phono jacks) ㊶–㊹**

40 **RFU DC OUT (RFU adaptor DC output) jack (special minijack) ㊷, ㊸**

41 **Grip strap cover**

42 **Tripod receptacle (bottom)**

(B-4)

43 **Built-in microphone (stereo)**

44 **Remote sensor ⑦**

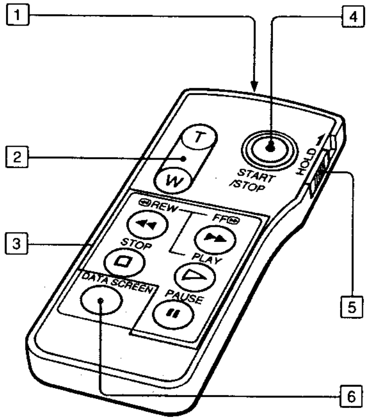
45 **FADER button ㉞**

46 **Camera recording/battery lamp**

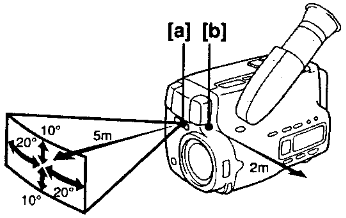
47 **Stand**

Caution (B-5)
Do not pick up the camcorder as shown in the illustration.

(B-6)



(B-7)



Wireless Remote Commander

You can remotely record or play back a tape. The buttons on the Remote Commander with the same name or same mark as those on the camcorder have the same function.

When you use the Remote Commander
Be sure to insert the supplied lithium battery into it (page 10) and to set REMOTE COMMANDER ▣ ON/OFF on the camcorder to "ON".

(B-6)

1 **Transmitter**

2 **Power zoom button**

3 **Tape transport buttons**

4 **START/STOP button**

5 **HOLD switch***
Slide in the direction of the arrow to prevent the buttons from being accidentally depressed.

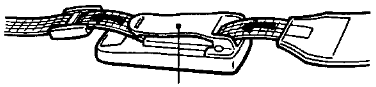
6 **DATA SCREEN button* ㊻**
Press to erase or display the on-screen display.

Note
The * indicates the function which is operable only with the Remote Commander.

Remotely controllable area (B-7)
Point the Remote Commander towards the remote sensor **[a]**.
The unit has another remote sensor **[b]**.

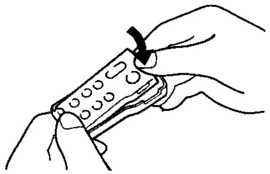
Notes on the Remote Commander
- **Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise the remote control may not be effective.**
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works through the signals of commander mode VTR 2. A commander mode is used to distinguish this camcorder from other Sony VTR to avoid misoperation. If you use another Sony VTR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

(B-8)

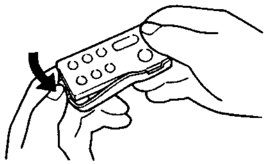


(B-9)

[a]



[b]



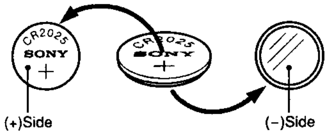
Using the Remote Commander holder
You can clip the Remote Commander holder on your coat pocket or belt, or also slide it onto the shoulder belt before attaching the Remote Commander to it. **(B-8)**

(B-9)

[a] When attaching the Remote Commander to the Remote Commander holder

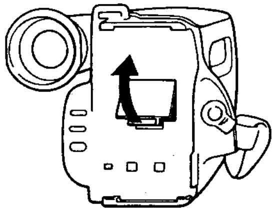
[b] When detaching the Remote Commander from the Remote Commander holder

(C-1)

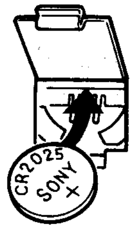


(C-2)

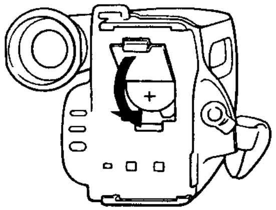
1



2



3



Preparing your camcorder 1

Inserting the Lithium Batteries

Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander. Note that the lithium battery has a + (plus) side and a − (minus) side as illustrated. **Be sure to install the lithium battery with the correct polarity. (C-1)**

Inserting the Lithium Battery into the Camcorder

(C-2)

This camcorder uses a lithium battery to activate the clock and to keep a title in memory. At first install the supplied lithium battery.

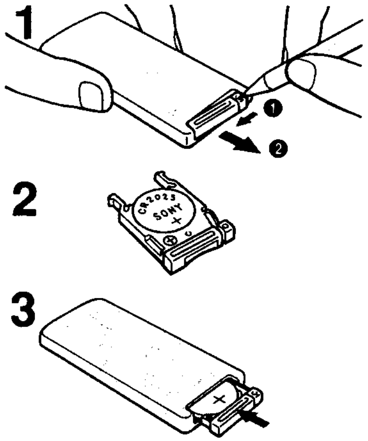
1. **Open the lid of the lithium battery compartment.**
2. **Install the supplied CR2025 lithium battery with the + side facing out.**
3. **Close the lid.**

To change the lithium battery
Remove the battery pack, open the lid of the lithium battery compartment, and replace the lithium battery with a new one.
After replacing the battery, readjust the date, time and title.

Inserting the Lithium Batteries

Inserting the Lithium Battery into the Remote Commander

(C-3)



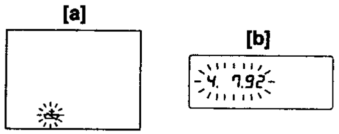
(C-3)

1 **Pull out the lithium battery holder from the Commander.**

2 **Install the lithium battery with the + side facing upward.**

3 **Put the lithium battery holder back into the Commander.**

(C-4)



Lithium battery life (under normal operation)

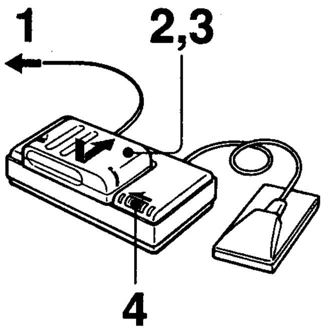
(C-4)

The battery for the camcorder lasts for approximately 1 year.
When the battery becomes weak, the 🔋 indicator will flash inside the viewfinder for about 5 seconds (when the POWER switch is set to CAMERA) **[a]** and the tape counter or date (or time) will flash in the display window for about 5 seconds **[b]**.
The battery for the Remote Commander lasts for approximately 6 months. When the battery becomes weak or dead, the Commander does not work.
In either case, replace the battery with a Sony CR2025 battery. Use of any other type of battery may present the risk of fire or explosion.

CAUTIONS

- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated.
  Do not recharge, disassemble, or dispose of in fire.

(D-1)



Preparing your camcorder 2

Connecting the Power Sources

First, Choose the Power Source.

Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-55H, NP-66H, NP-77, NP-77H, NP-77HD
	Alkaline batteries	Battery case EBP-77
Indoors	House current	AC power adaptor AC-V35 or AC-V35A (supplied), AC-V55, AC-S10
In the car	12V or 24V car battery	DC pack DCP-77, AC power adaptor AC-V55, the car battery cord DCC-16AE and the car battery charger DC-S10

For details, see the operation manual of the accessory you want to use.

Using the Battery Pack

Step 1

Charge the battery pack. (D-1)

1 **Connect the AC power adaptor to a wall outlet.**

2 **Align the right side of the battery pack with the line on the AC power adaptor.**

3 **Slide in the battery pack to the right.**

4 **Set the selector to "CHARGE" position.**
When charging is finished, the charge lamp goes out.

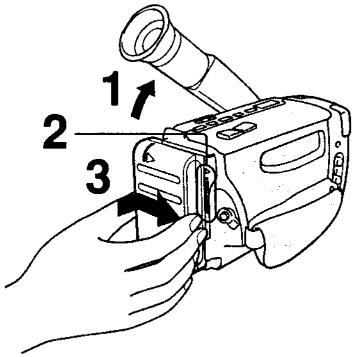
	NP-55	NP-55H	NP-77H/ 77HD	NP-77	NP-66H
Required charging time*	60	70	140	120	110
Battery life**	55	65	120	105	90

* Approximate minutes using AC-V35 or AC-V35A

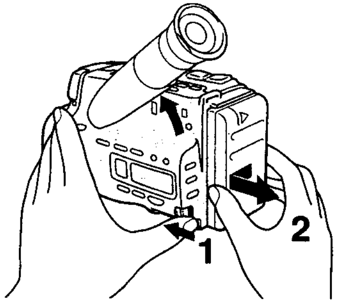
** Approximate minutes using fully charged battery pack, continuous recording indoors

(continued)

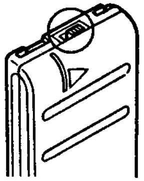
(D-2)



(D-3)



(D-4)



Connecting the Power Sources

Step 2

Mount the battery pack on the camcorder. (D-2)

1 **Lift up the viewfinder.**

2 **Align the right side of the battery pack with the white line on the camcorder.**

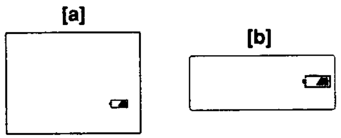
3 **Slide the battery pack to the right.**

Note
Make sure the battery fits completely on the mounting surface of the camcorder.

To remove the battery pack (D-3)
1 While pressing the BATT knob in the direction of the arrow, **2** slide the battery pack to the left and pull it out as illustrated.

How to use the switch on the battery pack (D-4)
This switch is provided so that you can remember the charging condition. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is dead.

(D-5)



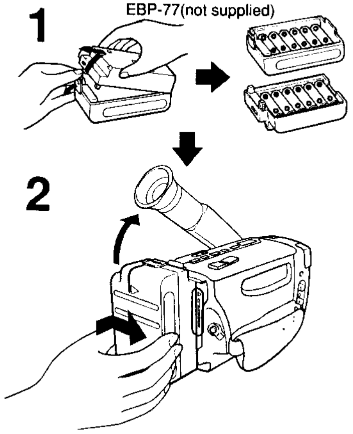
Connecting the Power Sources

Battery life indicator
You can check the remaining battery capacity with the battery life indicator inside the viewfinder **[a]** and in the display window **[b]**. The decreasing black bar indicates decreasing battery power. **(D-5)**

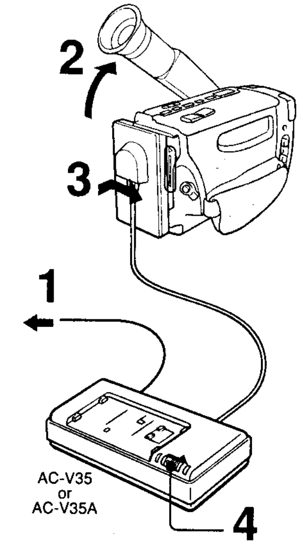
Note
The battery life indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack. The indicator of NP-77HD is more accurate.

Other options for charging
- AC-V55 AC power adaptor:
  You can charge two battery packs simultaneously.
- AC-S10 AC power adaptor:
  This adaptor has a discharging function. When you want charging only, slide the skip switch on the adaptor in the direction of the arrow.
- BC-55 portable battery charger:
  You can charge a battery pack on 100 – 240 V AC.
- DC-V30 car battery charger:
  You can charge a battery pack by connecting the car battery charger to the cigarette lighter socket. This battery charger also supplies power for Sony 8 mm equipment that operates on a battery pack.
- DC-S10 car battery charger:
  This charger has a discharging function. When you want charging only, slide the skip switch on the charger in the direction of the arrow.

(D-6)



(D-7)



Connecting the Power Sources

Using Alkaline Batteries

(D-6)

1 **Insert 12 R6 (AA) size alkaline batteries into the battery case.**

2 **Attach the case in the same way as the battery pack.**

Battery life (when using Sony alkaline batteries)
The battery lasts for approximately 2 hours and 15 minutes under continuous recording indoors. However, when you use non-Sony alkaline batteries, their life may shorten.

Notes on battery life

- Batteries will not last as long in cold places.
- No indication appears inside the viewfinder when the batteries are weak.

To remove the battery case
Remove it in the same way you do the battery pack. See page 12.

Using House Current

(D-7)

1 **Connect the AC power adaptor to a wall outlet.**

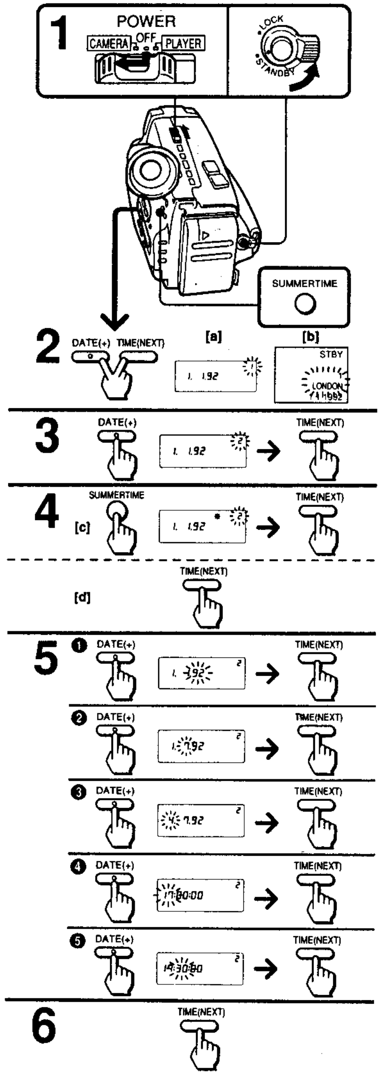
2 **Lift up the viewfinder.**

3 **Align the right side of the connecting plate with the white line on the camcorder, and slide it in to the right.**

4 **Set the selector to "VTR (DC OUT)" position.**

To remove the connecting plate
Remove it in the same way you do the battery pack. See page 12.

(F)



Preparing your camcorder 3

Setting the Date and Time

(F)

Make sure that a power source and lithium battery are installed.

1 **While pressing the green button, set the POWER switch to CAMERA, and turn STANDBY up.**

2 **Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds until " 1 " flashes in the display window [a] and " 1 LONDON" flashes inside the viewfinder [b].**
DATE (+) now functions as + (to advance numbers) and TIME (NEXT) functions as NEXT (to execute).

3 **Press DATE (+) until your area name and number appear and then press TIME (NEXT).**

Countries	Area name	Area number
The United Kingdom and Portugal (GMT)	LONDON	1
Other European countries (CET)	PARIS	2
Finland, Greece, etc.	CAIRO	3

4 **Choose one of the following options to set the clock:**
[c] To set to summer time, press SUMMERTIME. Then press TIME (NEXT). The ☀ indicator appears inside the viewfinder and in the display window.
[d] To set to standard time, press TIME (NEXT).

5 **Set the year *, month, day, hour and minute, in this order.**
First adjust the flashing digits with DATE (+) and then press TIME (NEXT)
* To set the year to 1992, no need to press DATE (+) in step 5 – ❶.

6 **Press TIME (NEXT) to set the second.**
The clock starts operating.

To correct the date and time setting
Press TIME (NEXT) repeatedly until the digits of minute stop flashing. Then repeat step 2 to 6.

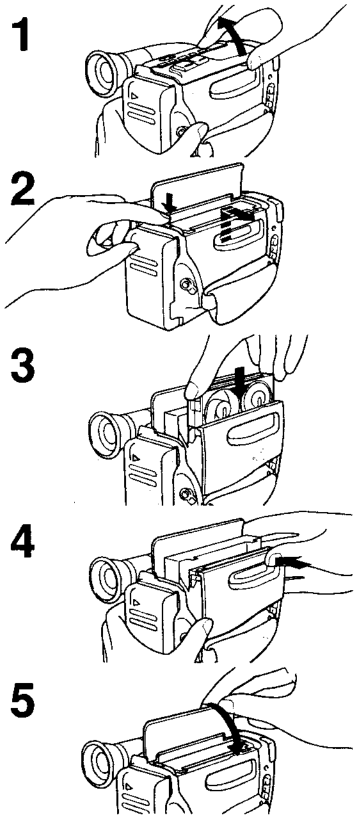
To advance the digits faster
Keep DATE (+) pressed.

To check the preset date and time
Press DATE (+) or TIME (NEXT). When you press the same button again, the indicator goes off.

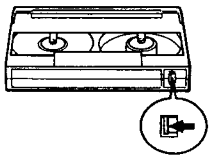
To reset to standard time
Press SUMMERTIME. The ☼ indicator goes off.

If the camcorder goes off abruptly while setting the date and time
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will go off automatically. Turn STANDBY down once and slide it up again.

(G-1)



(G-2)



Inserting a Cassette

Inserting a Cassette

(G-1)

Make sure that a power source is connected.

1. **Lift up the lid at the indentation point.**
2. **Press EJECT.**
   The cassette compartment will automatically lift up and open.
3. **Insert a cassette with the window facing out.**
4. **Press the PUSH mark on the cassette compartment cover to close it.**
5. **Close the lid.**

Ejecting the Cassette

Make sure that a power source is connected.

1. **Lift up the lid at the indentation point.**
2. **Press EJECT.**
3. **Take out the cassette and press the PUSH mark on the comparment cover to close it.**
4. **Close the lid.**

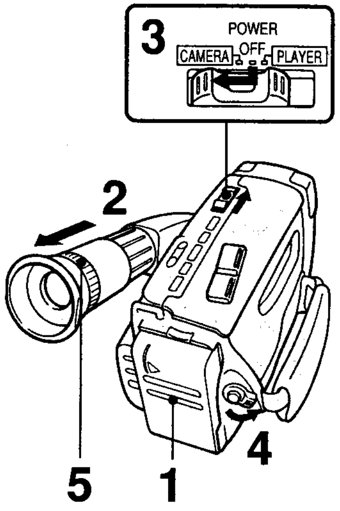
Preventing Accidental Erasure

(G-2)

Slide the tab on the cassette to expose the red mark. This will prevent accidental recording.
To re-record on this tape, slide the tab back out covering the red mark.
If you try to record with the red mark exposed, the ▭ and ⏏ indicators flash inside the viewfinder and in the display window.

Note on handling tapes
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape, or if the tab is out or in, etc.

(H)



Preparing your camcorder 5

Adjusting the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust it when you use the camcorder for the first time, or when you use it after someone else did.
(H)

1 **Make sure that the power source is connected and that the cassette is inserted.**

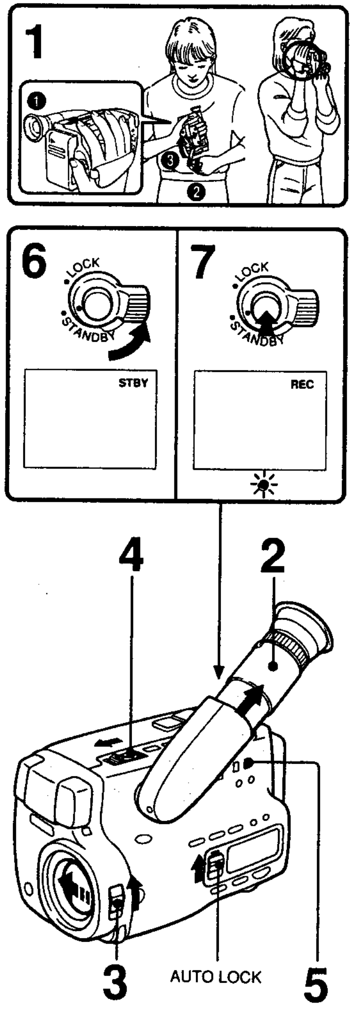
2 **Pull the viewfinder out until it clicks.**

3 **While pressing the green button, set the POWER switch to CAMERA.**

4 **Turn STANDBY up.**

5 **Turn the viewfinder lens adjustment ring so that "STBY" displayed in the viewfinder screen comes into sharp focus.**

(I-1)



Recording a Picture Using Automatic Adjustments

Before recording "once-only" events, we strongly recommend you make a trial recording and check that everything is working properly.

Make sure that the AUTO LOCK switch is slid up so that the AUTO LOCK mark (green) appears. This puts everything into automatic.
(I-1)

Start Recording

1 **Hold the camcorder as illustrated.**

2 **Make sure that the viewfinder is pulled out.**

3 **Slide LENS COVER to OPEN.**
If it is not open, you cannot record.

4 **While pressing the green button, set the POWER switch to CAMERA.**

5 **Set the REC MODE switch to LP (long play) or SP (standard play), according to the length of your planned recording.**

6 **Turn STANDBY up.**
"STBY" appears inside the viewfinder.

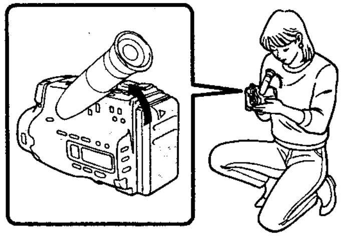
7 **Press START/STOP.**
"REC" appears and the red lamp lights up inside the viewfinder. The camcorder is now recording.

To standby (to stop momentarily)
Press START/STOP again.
"STBY" appears inside the viewfinder. The camcorder is in the standby mode again.

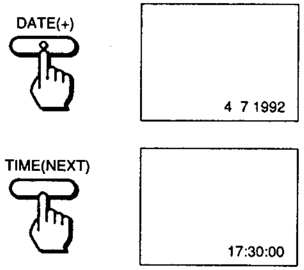
To stop
Turn STANDBY down and set the POWER switch to OFF.

Note
Shoot the subject at the wide-angle position in macro. At the telephoto position, if the subject is closer than 80 cm (2 ft. 7 1/2 in.), it cannot be brought into focus.

(I-2)



(I-3)



For low-position recording (I-2)
The viewfinder can be turned 90 degrees upward.
It can be used in either the pushed-down or pulled-out position.

Near the end of the tape
The ▭ indicator, the red lamp inside the viewfinder, and the camera recording/battery lamp on the camcorder flash slowly. When the tape reaches the end, the flashing becomes rapid.

Note on recording
To record from the beginning of the tape, run the tape for about 15 seconds before recording. This will avoid missing the starting point when the tape is played back.

Note on the standby mode
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will go off automatically. To resume the standby mode, turn STANDBY down once and slide it up again. To start recording, press START/STOP directly.

Recording mode
You can record and play back a picture on a tape in both SP (standard play) and LP (long play) modes.
However, the quality of the playback picture in the LP mode will not be as good as that in the SP mode.

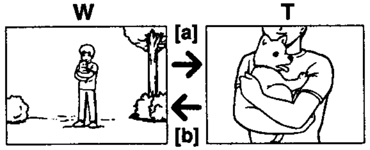
Recording Date or Time

(I-3)

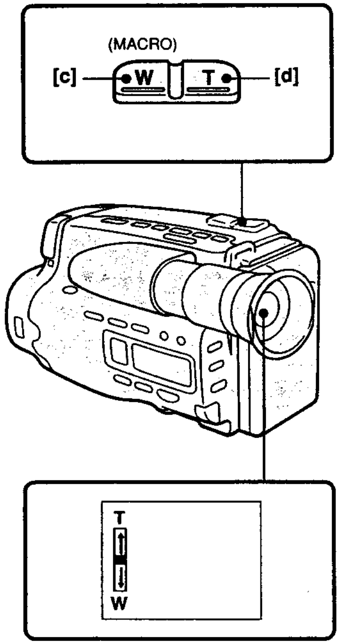
During camera recording or when in the recording pause mode, press DATE(+) for date indicator or TIME(NEXT) for time indicator.
The date or time displayed inside the viewfinder is recorded with the picture.

To stop recording date or time
Press DATE(+) or TIME(NEXT) again.
The date or time indicator disappears.
The picture recording continues.

(I-4)



(I-5)



Using Zooming Features

By zooming, you can change the size of the subject in the scene. Use "zoom-in (Telephoto)" for dramatic close-ups **[a]**, and "zoom-out (Wide-angle)" for panoramic long shots **[b]**. Also use the zoom to focus manually or to decide the shooting angle.
For more professional-looking recordings, use zooming sparingly. **(I-4)**

Two-Speed Zooming (I-5)

The camcorder's power zoom button offers two-speed zooming. Press it firmly for high speed zooming and softly for relatively slow zooming.

[c] W side: for wide-angle (subject appears farther away)
[d] T side: for telephoto (subject appears closer)

Autofocusing in macro
Even small subjects, such as flowers, insects, and images in photographs, can literally fill the screen using autofocusing in macro.
We recommend you to use a tripod when shooting in macro.

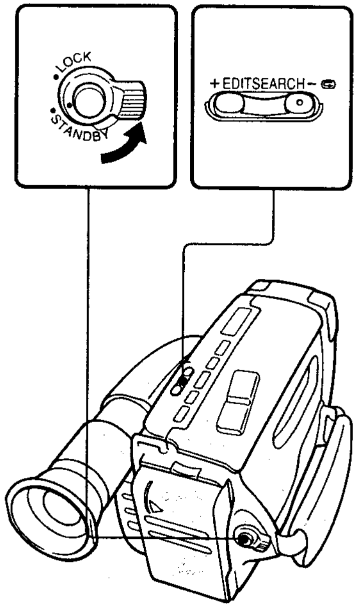
1 **Bring the camcorder as close as necessary to obtain the desired subject size.**

2 **Slide the AUTO LOCK switch up so that the AUTO LOCK mark (green) appears.**

3 **Keep pressing the W (MACRO) side of the power zoom button until the zooming stops (wide-angle).**

Manual focusing in macro
You can also shoot with manual focus while doing close-up.
For manual focusing, see page 29.

(I-6)



Checking the Recorded Picture Inside the Viewfinder (EDITSEARCH)

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture inside the viewfinder. After checking your recorded picture, you can also re-record over a previously recorded portion. **(I-6)**

To review the last recorded scene — Rec Review
You can check the last portion of a scene you just recorded in the CAMERA mode. This is convenient for quick, on-the-spot checks.

1 Set the camcorder in the standby mode by turning STANDBY up.

2 Press the – side of EDITSEARCH (⊜) momentarily.
The last few seconds of the recorded portion are played back inside the viewfinder. Then, the camcorder goes back to standby mode, ready for the next recording.

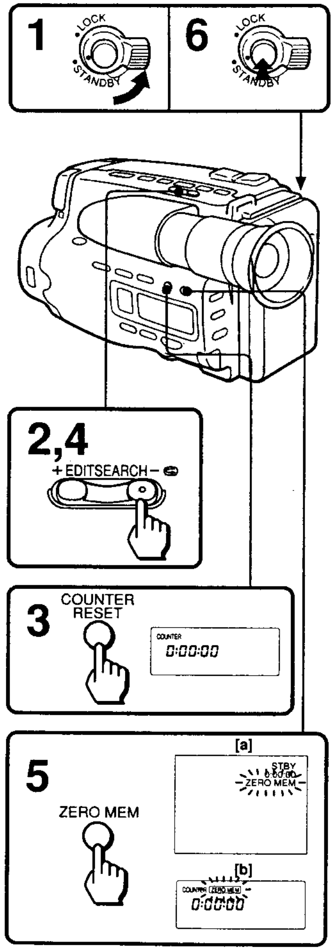
To check your recorded picture
You can check the recorded picture inside the viewfinder. After checking, you can also re-recorded over a previously recorded portion.

1 Set the camcorder in the standby mode by turning STANDBY up.

2 Keep pressing the + side or – side of EDITSEARCH to play back the picture while looking inside the viewfinder.
+ side: to view the forward playback picture
– side: to view the reverse playback picture
To stop playback, release EDITSEARCH.

3 If you want to re-record over a recorded portion, follow the procedures below:
❶ Press the + side or – side of EDITSEARCH to locate the point you want to begin re-recording.
❷ Press START/STOP to begin re-recording. Re-recording begins from the point you released EDITSEARCH. As long as the tape is not ejected, the transition between the scenes will be smooth.

(I-7)



Re-recording a Picture in the Middle of a Recorded Tape (Insert Recording)

(I-7)

1 Turn STANDBY up to set the camcorder in the standby mode.

2 While looking inside the viewfinder, keep pressing the + or – side of EDITSEARCH and release the button where you want to end the insertion.
The camcorder enters the standby mode again.

3 Press COUNTER RESET.
The counter is reset to zero.

4 While looking inside the viewfinder, keep pressing the – side of EDITSEARCH and release the button at the point where you want to start the insertion.

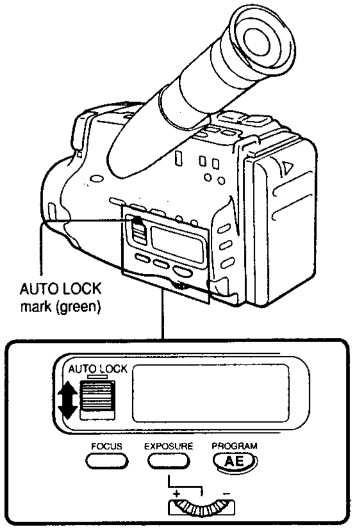
5 Press ZERO MEM.
The insert ending point is stored in memory.
[a] Viewfinder
[b] Display window

6 Press START/STOP.
Insert recording begins.
It stops automatically near the counter zero point.

To cancel ZERO MEM
Press ZERO MEM.

Note
The picture may be distorted at the end of the inserted portion when played back.

(J)



Selecting the Automatic or Manual Adjustment

The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for effective recording. You can manually adjust focus and exposure with this camcorder. You can also select the recording mode with the PROGRAM AE button to meet the shooting situations. **(J)**

Automatic adjustment
Slide the AUTO LOCK switch up so that the AUTO LOCK mark (green) appears.
Focus and exposure are adjusted automatically with this camcorder.

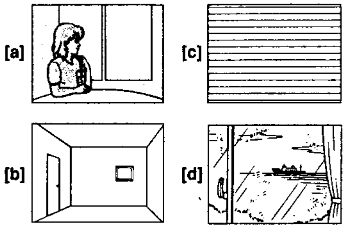
Manual adjustment
Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.
You can manually adjust focus (page 29) and exposure (page 31). You can also select the recording mode ("Portrait," "Sports" or "High-speed shutter") with the PROGRAM AE button. (See page 32.)

Even if you slide the AUTO LOCK switch down (in manual adjustment mode)
The settings you didn't adjust manually remain the same as those in automatic adjustment.

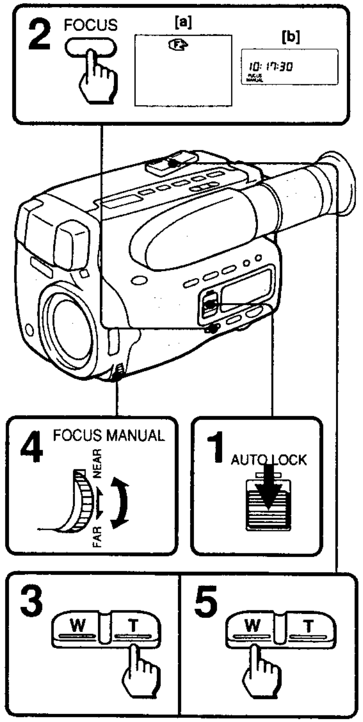
About the previous settings
The settings you made during manual adjustment are retained in the following cases:

- When you set the POWER switch to OFF.
- When you slide the AUTO LOCK switch up after you have made manual adjustment, and then slide it down again.
  They are canceled if more than 5 minutes pass after you have detached the power source.

(K-1)



(K-2)



Manual Focusing

We recommend manual focusing in the following cases. **(K-1)**

[a] Too bright behind the subject
[b] Subjects with little contrast—wall, sky, etc.
[c] Horizontal stripes
[d] Subject through frosted glass

- Insufficient light
- One subject is close; the other is in the center, but at a distance
- Subjects beyond nets, etc., or another subject passes in front of the camcorder
- Bright subject or subject reflecting light
- High contrast behind the subject (the background may be in focus)
- When shooting a stationary subject using tripod
- When you want to save battery power

Focusing Manually

(K-2)

1 **Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.**

2 **Press FOCUS .**
The Ⓕ (manual focusing) indicator appears inside the viewfinder **[a]** and the FOCUS MANUAL indicator appears in the display window **[b]**.

3 **Keep pressing the T side of the power zoom button until the zooming stops (telephoto).**

4 **Turn the FOCUS MANUAL dial to achieve sharp focus.**

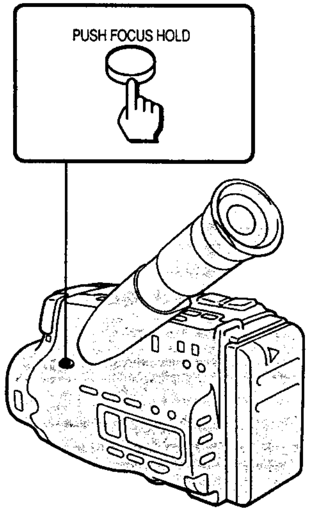
5 **Keep pressing the W side of the power zoom button to obtain the desired subject size.**

To reactivate autofocusing
Press FOCUS again, or slide the AUTO LOCK switch up so that the AUTO LOCK mark (green) appears. The Ⓕ indicator and the FOCUS MANUAL indicator disappear.

Shooting in relatively dark places
Shoot at wide angles after focusing in telephoto.

Note
The focus dial does not have a stop position.

(L)



Fixing the Focus to the Object

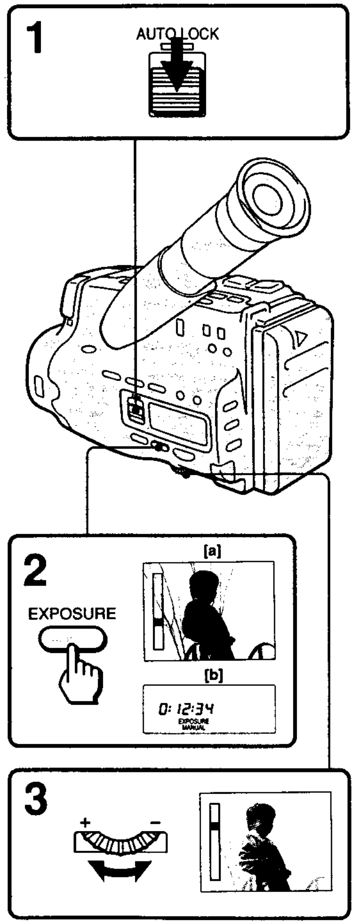
When shooting a certain object with automatic focusing, you may see that an object abruptly passing in front of the object you want to shoot is in focus and the object on which you want to focus is out of focus. In this case, use the PUSH FOCUS HOLD button to set the focus to the object you want to focus. **(L)**

1 **Focus on the object you want to shoot.**

2 **Keep pressing PUSH FOCUS HOLD.**
As long as you hold the button, the automatic focus is inactivated (the Ⓕ indicator appears inside the viewfinder) and the focus is fixed to the object you want to focus.

To restore the automatic focusing mode
Release PUSH FOCUS HOLD.

(M)



Adjusting the Exposure

In the following cases you should obtain better results by adjusting the exposure manually.

Conditions	Turn the EXPOSURE dial:
The background is too bright (backlighting)	+ – in the + direction
Insufficient light: most of the picture is dark.	
Bright subject and dark background	+ – in the – direction
To record the darkness faithfully	

Adjusting the Exposure Manually

(M)

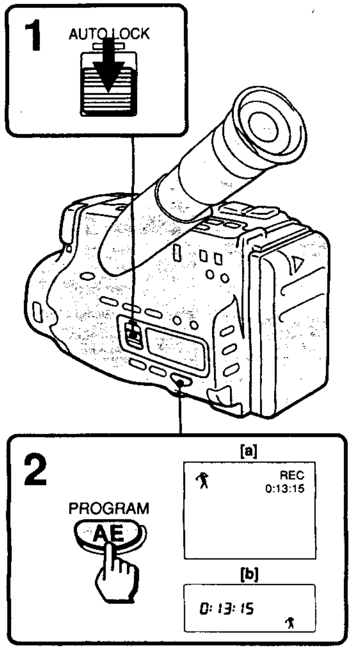
1 **Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.**

2 **Press EXPOSURE.**
The exposure is locked at the present brightness.
The exposure indicator appears inside the viewfinder **[a]** and the EXPOSURE MANUAL indicator appears in the display window **[b]**.

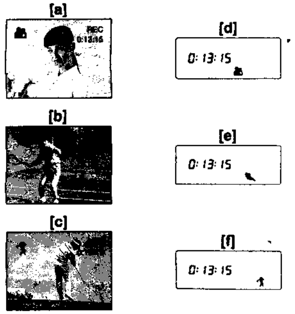
3 **Adjust the exposure by turning the EXPOSURE dial in the + or – direction.**
The exposure is locked at the adjusted brightness.

To restore the automatic exposure mode
Slide the AUTO LOCK switch up or press EXPOSURE again so that the exposure indicator inside the viewfinder and the EXPOSURE MANUAL indicator in the display window disappear.

(N-1)



(N-2)



Using the PROGRAM AE Function

When you use the PROGRAM AE (Auto Exposure) function, you can create a "portrait" effect or capture high-speed action using the "sports" mode or "high-speed shutter" mode.

(N-1)

1 **Slide the AUTO LOCK switch down so that the AUTO LOCK mark (green) disappears.**

2 **Press PROGRAM AE.**
The PROGRAM AE indicator appears inside the viewfinder **[a]** and in the display window **[b]**.

Each time you press the button, the PROGRAM AE mode indicator changes as follows:

→ ("Portrait" mode) → ("Sports" mode)
No indicator (normal mode) ← ("High-speed shutter" mode).

To restore automatic adjustment
Slide the AUTO LOCK switch up or press PROGRAM AE again so that the PROGRAM AE indicator disappears.

To select the mode

(N-2)

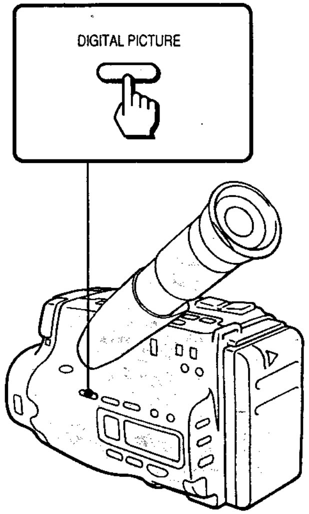
You may want to use the respective mode when shooting the following subjects or when shooting under the following conditions:

[a] [d] Portrait mode
- A still subject such as a person or flower
- Subject behind such obstacles as a net
- Zooming on a subject in the telephoto mode

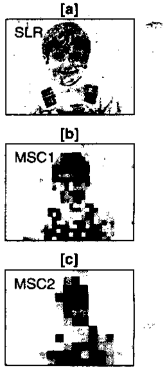
[b] [e] Sports mode
- Recording a landscape while in a moving car
- Outdoor sports scene such as football or tennis
- Subjects moving at high speed, such as a roller coaster on a cloudy day

[c] [f] High-speed shutter mode
- Shooting a golf swing or a tennis match with the tennis ball captured clearly on a fine day
- You wish to play back certain scenes having high speed movement and getting a clear, sharp picture

(O-1)



(O-2)



Notes
- As long as the PROGRAM AE indicators are displayed inside the viewfinder and in the display window, you cannot adjust exposure manually.
  If you should press EXPOSURE when the PROGRAM AE indicator is displayed, the PROGRAM AE function is canceled and the exposure adjustment function starts to operate.
  To restore the PROGRAM AE function, press PROGRAM AE again.
- The shutter speed in each PROGRAM AE mode is as follows:
  Portrait mode — between 1/50 to 1/1650
  Sports mode — between 1/50 to 1/500
  High-speed shutter mode — 1/4000

Using the Digital Picture Function

When you use the digital picture function, you can record the picture with a solarization effect or two types of mosaic effect.

(O-1)

Press DIGITAL PICTURE during recording or in the recording standby mode.
Each time you press the button, the indicator inside the viewfinder changes as follows:

→SLR (solarization) → MSC1 (mosaic 1)
No indicator (normal picture) ← MSC2 (mosaic 2)

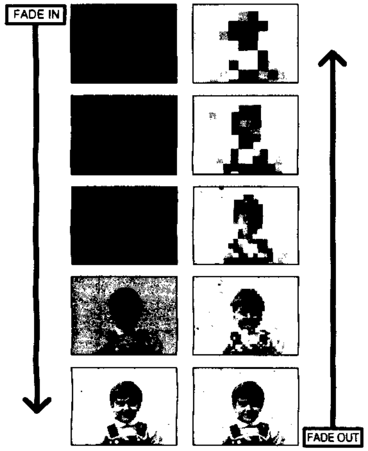
(O-2)

[a] Picture with a solarization effect (SLR)
[b] Picture with a mosaic effect (MSC1)
[c] Picture with a mosaic effect (MSC2)

To cancel the digital picture function
Press DIGITAL PICTURE repeatedly until the digital picture indicator disappears from the viewfinder.

Fade-in and Fade-out

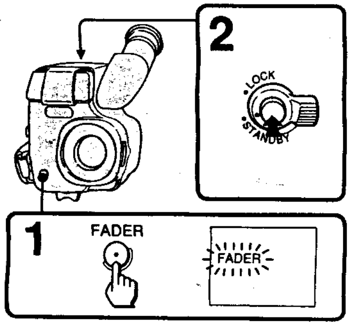
(P-1)



(P-1)

You can fade-in or fade-out to give your recording a professional appearance.
When fading-in, the picture will gradually appear from black or mosaic. The sound will also gradually increase.
When fading-out, the picture will gradually fade to black or mosaic. The sound will also gradually decrease.

(P-2)



About the FADER button (P-2)
Each time you press FADER, the indicator inside the viewfinder changes as follows:

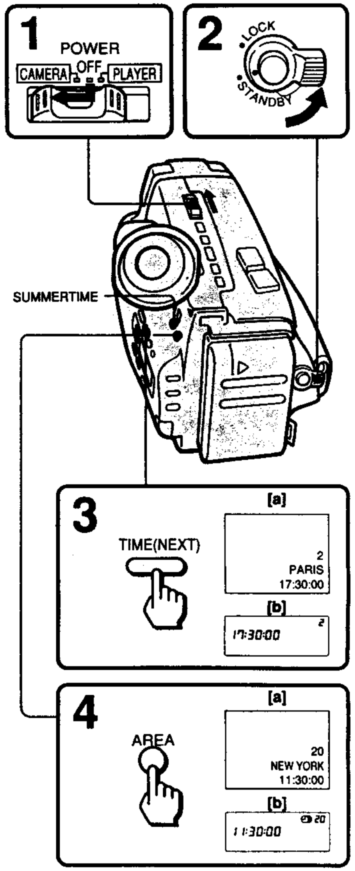
FADER → M. FADER → (No indicator)
(black fade) (mosaic fade)

1. **Select the type of fade by pressing FADER as follows:**
   - [a] When fading-in, press FADER after turning STANDBY up to put the camcorder into the standby mode. The fade indicator starts flashing.
   - [b] When fading-out, press FADER while recording. The fade indicator starts flashing.
2. **Press START/STOP.**
   When fading-in, the fade indicator stops flashing and the recording starts fading-in.
   When fading-out, the fade indicator stops flashing and the picture fades out and then the recording stops.

To cancel the fade-in/fade-out function before it is performed
Before pressing START/STOP, press FADER again.

Using the World Clock

(Q-1)



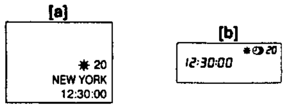
This camcorder has a world clock. While traveling abroad, you can easily adjust time of the place where you are using the camcorder by pressing AREA.
Before pressing AREA, set the date and time in your country (see page 19). **(Q-1)**

1. **While pressing the green button, set the POWER switch to CAMERA.**
2. **Turn STANDBY up to set the camcorder in standby mode.**
3. **Press TIME (NEXT).**
   The time in your country appears inside the viewfinder **[a]** and in the display window **[b]**.
4. **Press AREA until the area name and number where you are now using the camcorder appear.**
   The 🌐 indicator appears in the display window. You can find the area name and number in the "Time Zone Chart" on the pages 36 and 37.

To check the date
Press DATE (+).
To turn off the date indication, press DATE (+) again.

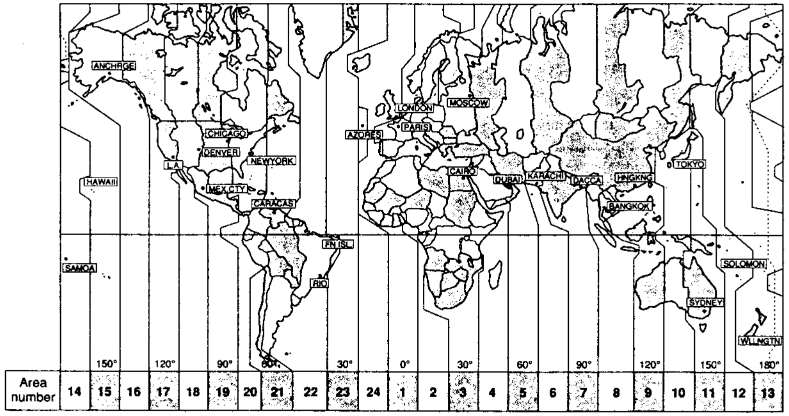
To reset to your country area time
Press AREA until your country area and number appears.

(Q-2)



To set summer time
Press SUMMERTIME. Time changes to summer time. ☀ indicator appears inside the viewfinder **[a]** and in the display window **[b]**. **(Q-2)**
To set to standard time, press SUMMERTIME again.

Time Zone Chart

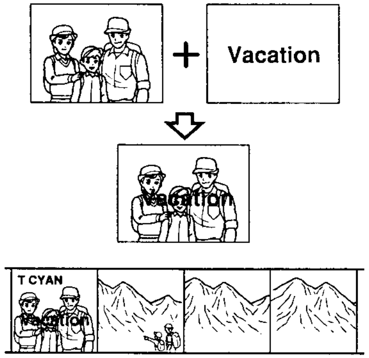

ANCHRGE
HAWAII
SAMOA
CHICAGO
DENVER
L.A.
NEWYORK
MEX.CTY
CARACAS
FN ISL.
RIO
AZORES
LONDON
PARIS
MOSCOW
CAIRO
DUBAI
KARACHI
DACCA
HNGKNG
BANGKOK
TOKYO
SOLOMON
SYDNEY
WLLNGTN
150°
120°
90°
60°
30°
0°
30°
60°
90°
120°
150°
180°
Area number
14
15
16
17
18
19
20
21
22
23
24
1
2
3
4
5
6
7
8
9
10
11
12
13

Area number	Area name	Countries or area*
1	LONDON	England, Morocco, Portugal, GMT (Greenwich Mean Time)
2	PARIS	Austria, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, CST (Continental Standard Time), Tunisia
3	CAIRO	Egypt, Finland, Greece, Turkey
4	MOSCOW	Ethiopia, Iraq, Kenya, Mauritius, Saudi Arabia, Seychells, former U.S.S.R (Moscow)
5	DUBAI	United Arab Emirates
6	KARACHI	Moldives, Pakistan
7	DACCA	Bangladesh, India, Myanmar
8	BANGKOK	Cambodia, Indonesia (Jakarta), Thailand, Vietnam
9	HNGKNG	Australia (Perth), China, Hong Kong, Indonesia (Bali, Borneo), Malaysia, Philippines, Singapore, Taiwan
10	TOKYO	Japan, Korea
11	SYDNEY	Australia (Sydney)
12	SOLOMON	New Caledonia
13	WLLNGTN	Fiji, New Zealand
14	SAMOA	Western Samoa
15	HAWAII	Hawaii I., Tahiti, HST (Hawaii Standard Time)
16	ANCHRGE	U.S.A. (Alaska), AST (Alaska Standard Time)
17	L.A.	U.S.A. (Los Angels, San Francisco), PST (Pacific Standard Time)
18	DENVER	U.S.A. (Denver), MST (Mountain Standard Time)
19	CHICAGO	Mexico, U.S.A. (Chicago), CST (Central Standard Time)
20	NEWYORK	Canada (Montreal), Jamaica, Peru, U.S.A. (New York, Washington D.C.), EST (East Standard Time)
21	CARACAS	Chile, Dominica, Venezuela
22	RIO	Argentina, Brazil, Uruguay
23	FN ISL.	Fernando de Noronha
24	AZORES	Azores Islands

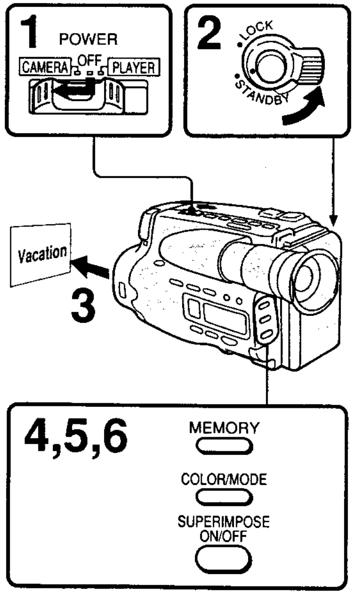
* These are common names. The formal names may be different.

Superimposing a Title

(R-1)



(R-2)



You can superimpose your own hand-written message or illustration (title) over the picture while you are recording. **(R-1)**

- You can store one title.
- You can select the colour of the title from 8 colours.
- You cannot superimpose a title on the tape already recorded.

Before superimposing, store the title.

Storing a Title

Before storing

- Make the desired title card.
  Use a plain, white card and draw the title in thick, dark letters.
- Make sure the lithium battery is installed. (page 9)

How to store (R-2)

1 **While pressing the green button, set the POWER switch to CAMERA switch.**

2 **Turn STANDBY up to set the camcorder in standby mode.**

3 **Point the camcorder to the title card and adjust the focus.**

4 **Press MEMORY to store the title.**

5 **Press COLOR/MODE and select the title colour.**
Each time you press the button, the indicator changes as follows:

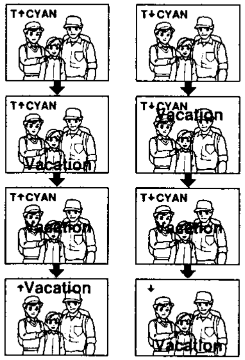
WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

6 **Press SUPERIMPOSE ON/OFF to turn off the title.**

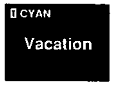
To check the title
Press SUPERIMPOSE ON/OFF in the standby mode.

To store a new title
Repeat steps 3 and 4.

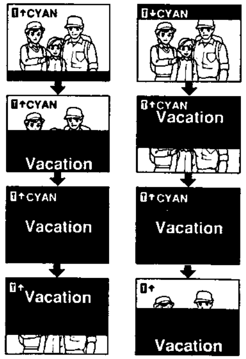
(R-3)



(R-4)



(R-5)



(R-6)

Various Display Modes of the Title

You can scroll your title like scrolling credits in the movies, or reverse the title.
Select the display mode of the title from the following table.

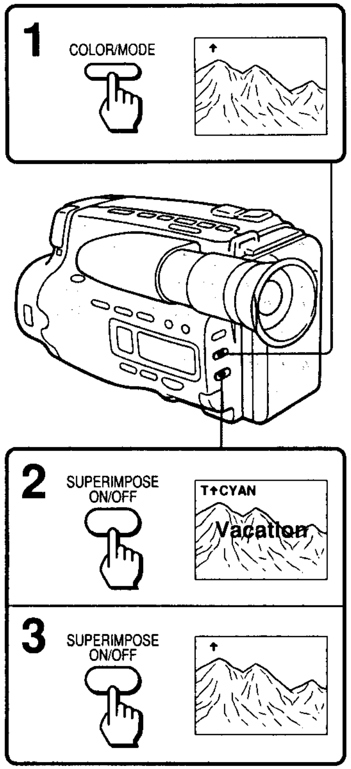
Display mode	Indicator in the viewfinder
Scrolling up the title (R-3)	↑
Scrolling down the title (R-3)	↓
Reversing the title with the picture (R-4)	🆃
Scrolling up the reversed title (R-5)	🆃↑
Scrolling down the reversed title (R-5)	🆃↓
Normal display mode	No indicator

Selecting the display mode
Before displaying the title, press COLOR/MODE until the indicator of the mode you want appears. **(R-6)**

Function of the COLOR/MODE Button

This button has a double function: one is to select the title colour and the other is to select the title display mode. If the title is displayed, this button functions as the colour selection button, and if it is not, it functions as the mode selection button.

(R-7)



Superimposing a Title

Superimposing a Title on Your Tape

The following shows how to superimpose a title using an example in which the title scrolls up.
(R-7)

1 **Press COLOR/MODE to select the display mode of the title in the standby mode.**

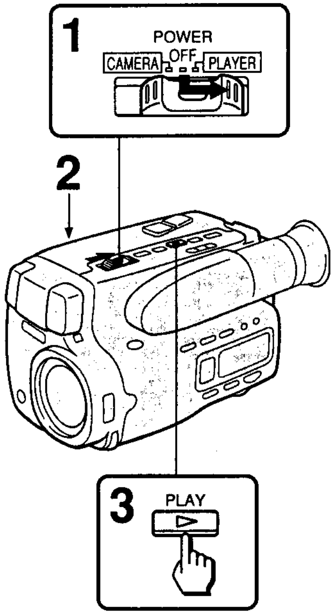
2 **Press SUPERIMPOSE ON/OFF at the point from which you want to insert the title, during recording.**
You can change the title colour by pressing COLOR/MODE. Each time you press the button, the colour indicator changes.

3 **Wait for a while and press SUPERIMPOSE ON/OFF again.**
The title goes out.

About the colour and the display mode indicators
The colour and the display mode indicators inside the viewfinder are not recorded.

To scroll the title without stopping at the center of the screen
Press SUPERIMPOSE ON/OFF twice continuously at the point from which you want to insert the title.

(T-1)



Playing Back a Tape

Turn on the TV, and select the channel for viewing a playback picture (set the TV/VIDEO selector to VIDEO).
Of course, you can monitor the playback picture inside the viewfinder at the same time.
(T-1)

1 **While pressing the green button, set the POWER switch to PLAYER.**

2 **Insert a tape.**

3 **Press ▷.**
Playback starts.

To view a still picture, press ❚❚ during playback.
To resume playback, press ❚❚ or ▷ again.

Notes
- **This unit has function to play back the tapes recorded in the Hi8 video system (in SP mode only), though the function it has is very basic.** You cannot get such finely detailed pictures as you could get with the video camera recorder with a Hi8 video system. Noise may result when you play back the tapes recorded in the Hi8 video system on this unit.
- When the still picture mode lasts for 5 minutes or more, the camcorder automatically enters the stop mode.

To rewind the tape, press ◀◀.

To advance the tape raidly, press ▶▶.

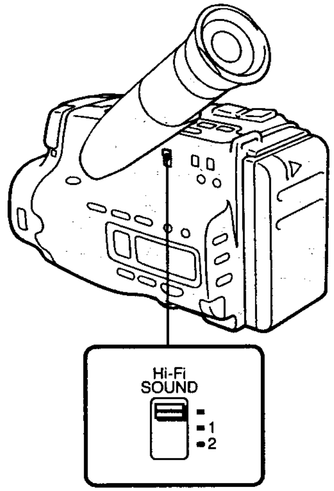
To stop the tape, press □.

To stop the tape momentarily, press ❚❚.

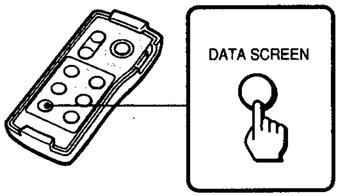
In the playback pause mode, you can view the picture in a sequence of stop-motion images by pressing EDITSEARCH. If you keep pressing EDITSEARCH, you can view the picture playback in the forward or reverse direction.

Note
Streaks appear and sound is muted in the still picture mode.

(T-2)



(T-3)



Playing Back a Tape

Monitoring a High-Speed Picture

To locate a scene (picture search)
Keep pressing ◀◀ or ▶▶ during playback. You can monitor the picture at high speed as long as you keep pressing the button.
To resume a normal playback, release the button.

To locate a scene quickly (skip scan)
Keep pressing ◀◀ during rewinding, or ▶▶ while advancing the tape rapidly.
You can monitor the picture at high speed as long as you keep pressing the button.
To resume a normal fast forwarding or rewinding, release the button.
To resume a normal playback, press ▷.

Selecting the Monitor Sound

(T-2)

You can select the playback sound with the Hi-Fi SOUND switch.

When playing back a Hi-Fi stereo sound recorded tape
Set the switch to "green postion."

When playing back an AFM monaural sound recorded tape
Set the switch to "green position."
Monaural sound comes from both audio jacks.

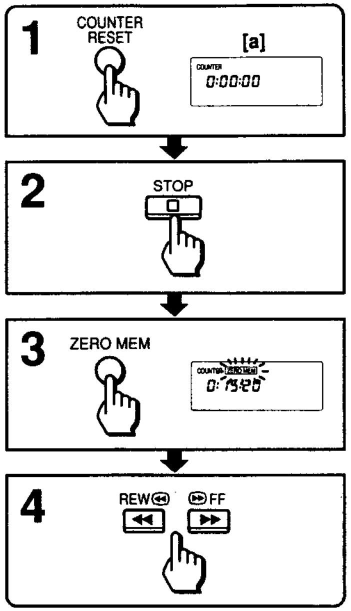
When playing back a dual sound track tape
Set the switch to "1" or "2".

Displaying the Viewfinder Screen Indicators on the TV

(T-3)

Press DATA SCREEN on the Remote Commander.
The indicators in the viewfinder screen appear on the TV.
To erase the indicators, press DATA SCREEN again.

(U)



Using the Tape Counter

During recording or playback, the digits on the counter indicate the actual recording or playing time.

Indexing the Whole Tape

(U)

Press COUNTER RESET at the beginning of the tape so that the counter shows "0:00:00."

Returning to a Pre-registered Point

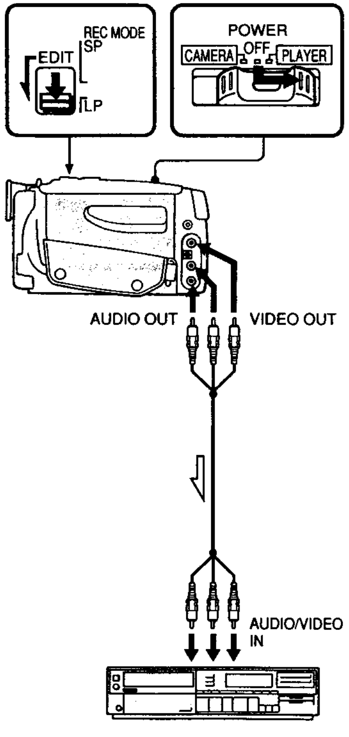
1. **During playback, press COUNTER RESET at the point you later want to locate.**
   The counter shows "0:00:00."
   [a] Display window
2. **Press □ when playback has finished.**
3. **Press ZERO MEM.**
   The "ZERO MEM" indicator flashes in the display window and inside the viewfinder.

   Note
   Be sure to press ZERO MEM after you stop the tape. It does not function during recording or playback.
4. **Press ◀◀ or ▶▶.**
   The tape rewinds or advances and stops automatically when the counter reaches approximately zero.

Notes on the tape counter and ZERO MEM

- The counter reading and the point on the tape may not correspond exactly. Use the counter as a guide. There will be a time lag of several seconds especially when you repeat fast-forwarding/rewinding and play back a tape recorded in LP and SP modes mixed.
- The ZERO MEM mode is canceled automatically once the tape is rewound or sent forward to the point you pre-registered.

(V)



: Signal flow

Editing onto Another VTR

You can create your own video programme by editing with any other 8 8 mm, Hi8 Hi8 mm, β Betamax, VHS VHS, S-VHS S-VHS, VHS-C VHSC, S-VHS-C S-VHSC VTR that has video/audio inputs.

Before You Begin

- Make connections using the supplied A/V connecting cable. **(V)**
- Set the input selector of the VTR to LINE, if available.

Operation

1. Insert a tape to be recorded on into the recording VTR.
2. Move EDIT on the camcorder in the direction of the arrow. (EDIT ON)
3. Set the POWER switch of the camcorder to PLAYER and insert your recorded tape.
4. Play back the tape on the camcorder and locate the point where you want to start editing and set the camcorder to the playback pause mode.
5. On the recording VTR, locate the recording start point and set the VTR to the recording pause mode.
6. Press ❚❚ on the camcorder and on the VTR simultaneously to start editing.

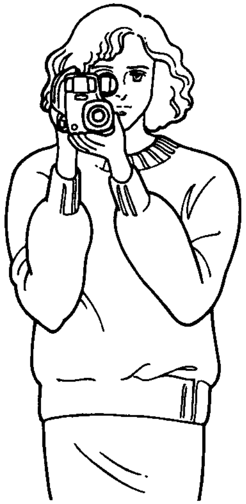
To stop editing momentarily, press ❚❚ on the VTR.

To edit more scenes, repeat steps 4 to 6.

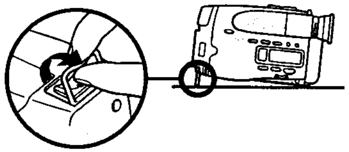
To stop editing, press □ on the camcorder and on the VTR.

Use of the EDIT switch
When you set EDIT in the direction of the arrow (EDIT ON), picture deterioration resulting from editing can be kept to the minimum. Don't use the edited tape for multiple generations of editing. After editing, move EDIT in the opposite direction of the arrow (EDIT OFF).

(W-1)



(W-2)



Hints for Better Shooting

Getting Stable Pictures

Assume good posture for shooting (W-1)
For hand-held shots, it is important to hold the camcorder properly.

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the camcorder with your thumb.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. When adjusting the focus manually, make sure the camcorder does not move.
- Stand opposite the object and let your feet take a comfortable stance.
- Place your eye firmly against the viewfinder eyecup.

Use a tripod
If you have a tripod for a still camera, it can also be used with the camcorder. If a tripod is not available, try placing the camcorder on a table top or any other flat surface of suitable height.

Note
When attaching a non-Sony tripod, make sure that the length of the camera mounting screw is less than 6.5 mm. Otherwise, the screw may damage the inner parts of the camcorder.

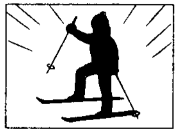
Use the built-in stand (W-2)
This camcorder has a built-in stand at the bottom. Lift it up until it clicks and place the camcorder on a flat surface, such as a table.
Use the stand when:

- You want to correct any camera-shake.
- You record the subject using the Remote Commander.

Do not attach a shoulder belt through the stand.

Keep the horizontal plane level
The horizontal plane can be easily determined by using the viewfinder frame as a reference.

(W-3)



Lighting

(W-3)

Shoot with the sun behind you
When the light source is behind the subject, or in the following situations, the subject will be recorded too dark and the background too light.

- The subject is indoors and there is a window behind the subject.
- Bright light sources such as fluorescent or incandescent lamps are included in the scene.
- You are shooting a person wearing white or shiny clothes in front of a white backgrounds. In this case, the face will be recorded too dark.

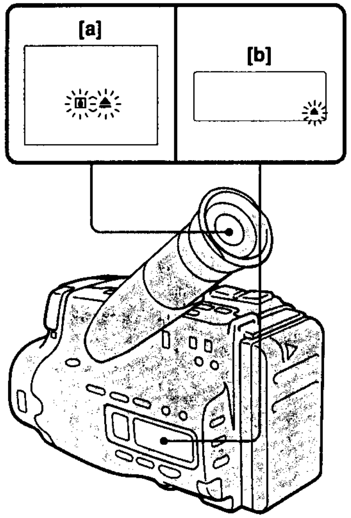
Use video light in the dark
To get the best colours, you must maintain a very high lighting level. When using a video light, attach it to this camcorder with a video light attachment (not supplied.)

Notes and Precautions

Notes on Moisture Condensation

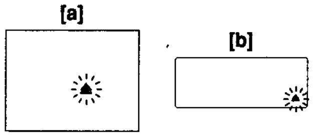
If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with a moisture sensor. However, take the following precautions:

(X-1)



If moisture condenses inside the camcorder (X-1)
When the 💧 and ⏏ indicators inside the viewfinder **[a]** and the ⏏ indicator in the display window **[b]** flash, moisture condenses inside the camcorder. In this case, no function except for cassette ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette holder open for about 1 hour.
The camcorder can be used again if ⏏ indicator does not appear when the power is turned on again.

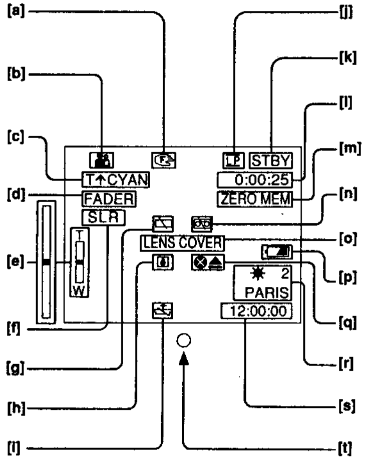
(X-2)



If moisture condenses on the surface of the tape (X-2)
If moisture is present on the surface of the tape when the tape is inserted and a tape transport button (▷, ▶▶, etc.) is pressed, the ⏏ indicator flashes inside the viewfinder **[a]** and in the display window **[b]**.
In such case, no function except for tape ejection will work.
Eject the tape and let it sit for about 1 hour.
The tape can be used again if the ⏏ indicator does not appear when the tape is inserted and a tape transport button is pressed.

If moisture condenses on the lens
No indicator will appear, but the picture becomes dim.
Turn off the power and leave the camcorder unused for about 1 hour.

(Y-1)


[a]
[b]
[c]
[d]
[e]
[f]
[g]
[h]
[i]
[j]
[k]
[l]
[m]
[n]
[o]
[p]
[q]
[r]
[s]
[t]
LP
STBY
T↑CYAN
0:00:25
FADER
ZERO MEM
SLR
T
W
LENS COVER
2
PARIS
12:00:00

Indicators inside the Viewfinder and in the Display Window

Inside the Viewfinder

(Y-1)

[a] Manual focusing

[b] Setting of PROGRAM AE mode

[c] Title mode

[d] FADER is pressed.

[e] POWER zoom indicator/Exposure indicator

[f] Digital picture indicator

[g] "Replace battery."

[h] "Moisture has condensed."

[i] "Replace lithium battery."

[j] Recording/Playback mode (LP/SP)

[k] Tape transport and camera recording mode

[l] Tape counter

[m]ZERO MEM is pressed.

[n] "Exchange tape or no cassette inside."

[o] The lens cover is closed.

[p] Remaining capacity of battery

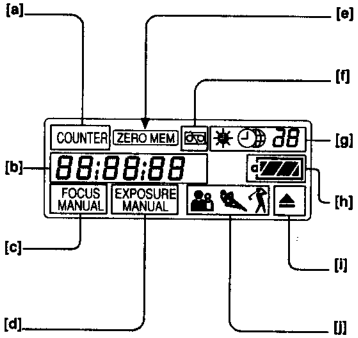
[q] "Clean video heads (⊗)" or "trouble has occurred (⏏)".

[r] World clock indicator

[s] Date or time

[t] Lights up during recording.
When flashing: "Replace battery."

(Y-2)


[a]
[b]
[c]
[d]
[e]
[f]
[g]
[h]
[i]
[j]
COUNTER
ZERO MEM
88:88:88
88
FOCUS MANUAL
EXPOSURE MANUAL

Display Window

(Y-2)

[a] Tape counter indicator

[b] Date, time, or tape counter

[c] Manual focusing

[d] Adjusting exposure manually

[e] ZERO MEM is pressed.

[f] "Exchange tape or no cassette inside."

[g] World clock indicator

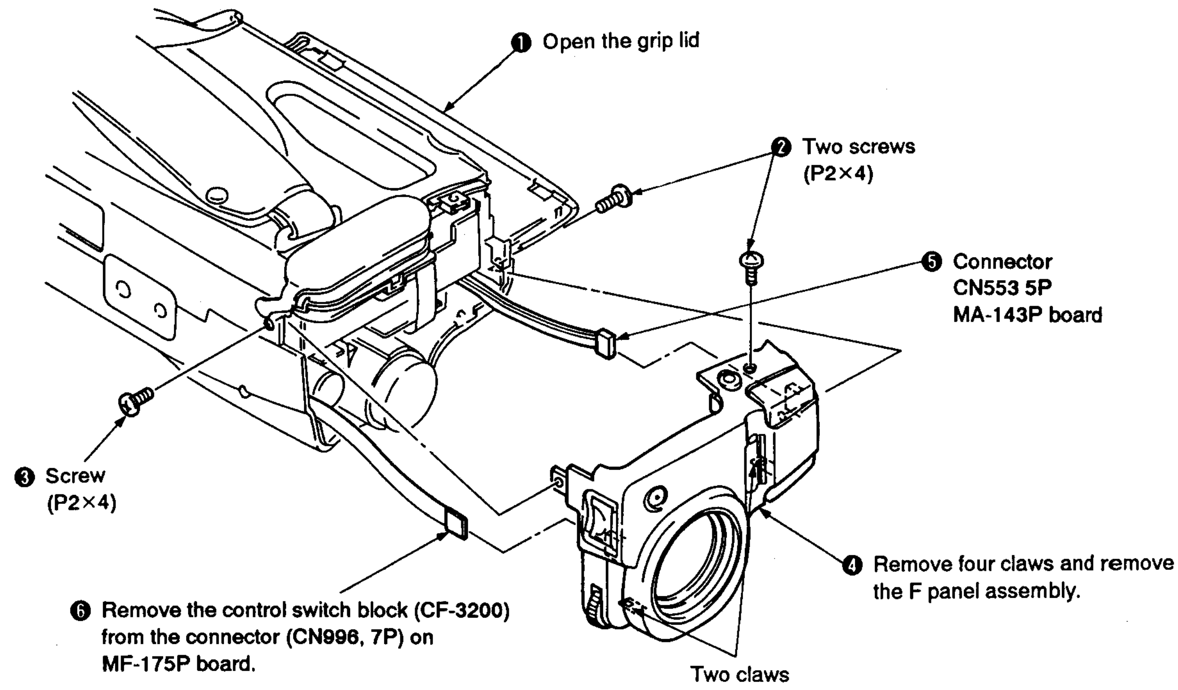
[h] Remaining capacity of a battery

[i] "Trouble has occurred."

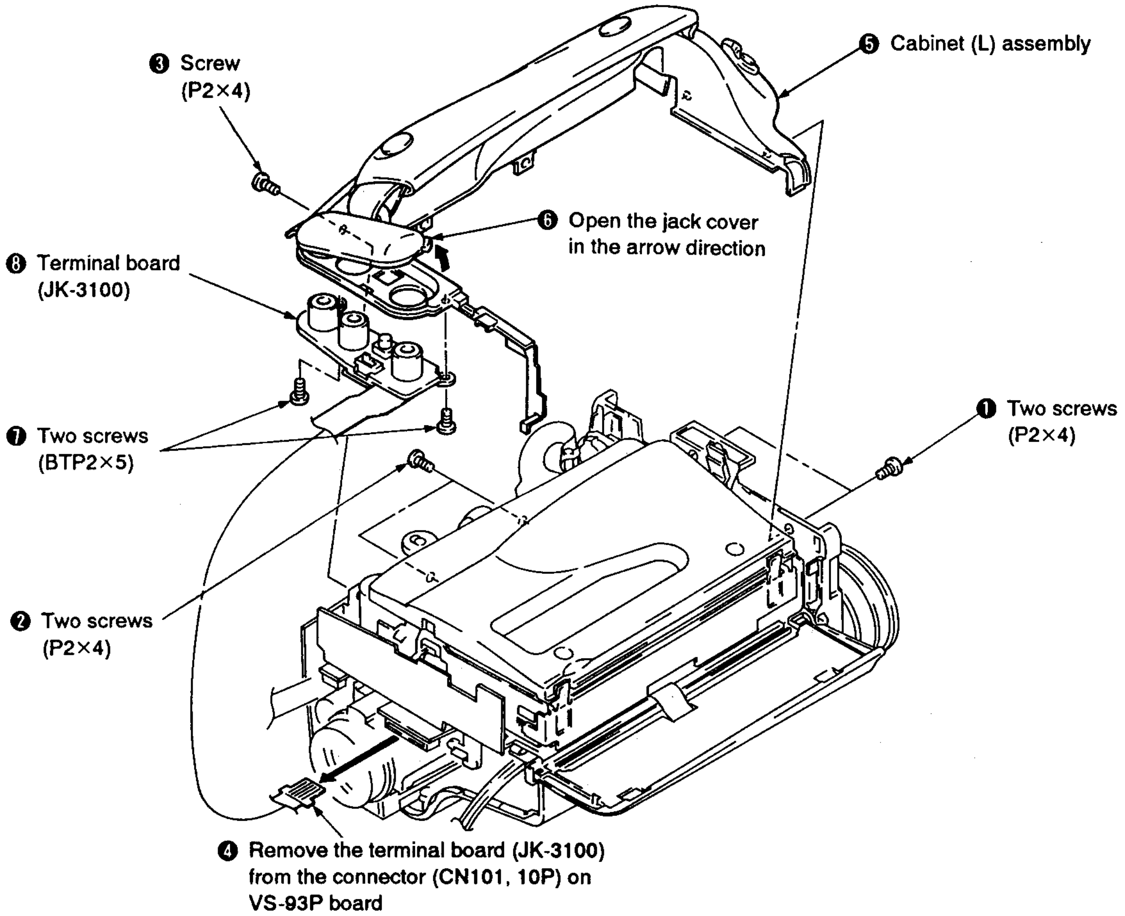
[j] Program AE setting

SECTION 2
DISASSEMBLY

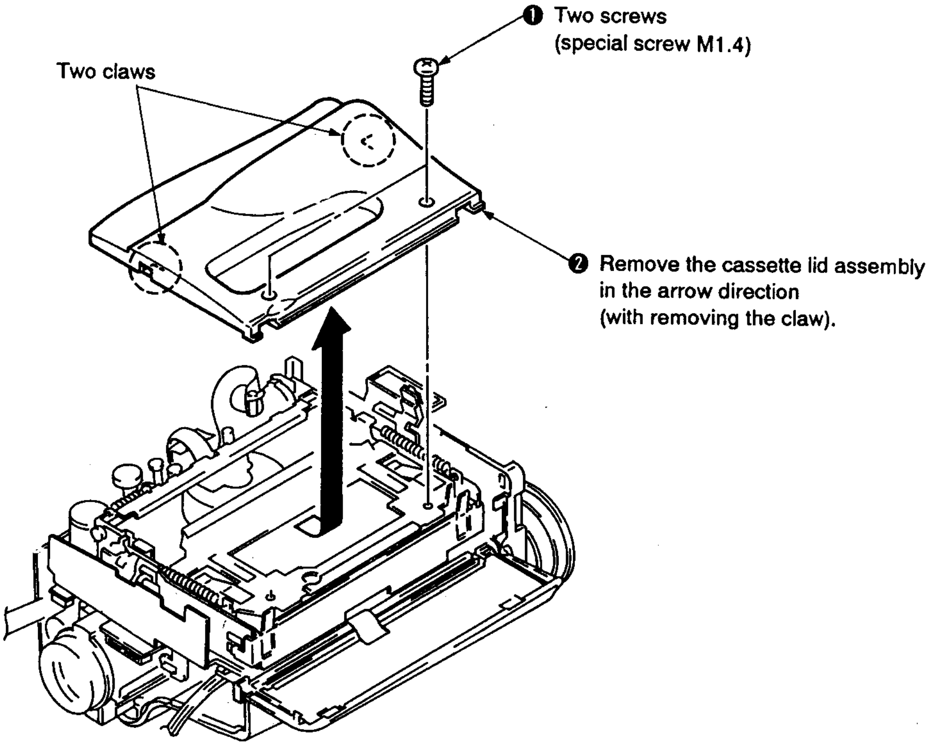
2-1. REMOVAL OF F PANEL ASSEMBLY


❶ Open the grip lid
❷ Two screws (P2×4)
❺ Connector CN553 5P MA-143P board
❸ Screw (P2×4)
❹ Remove four claws and remove the F panel assembly.
❻ Remove the control switch block (CF-3200) from the connector (CN996, 7P) on MF-175P board.
Two claws

2-2. REMOVAL OF CABINET (L) ASSEMBLY AND TERMINAL BOARD (JK-3100)

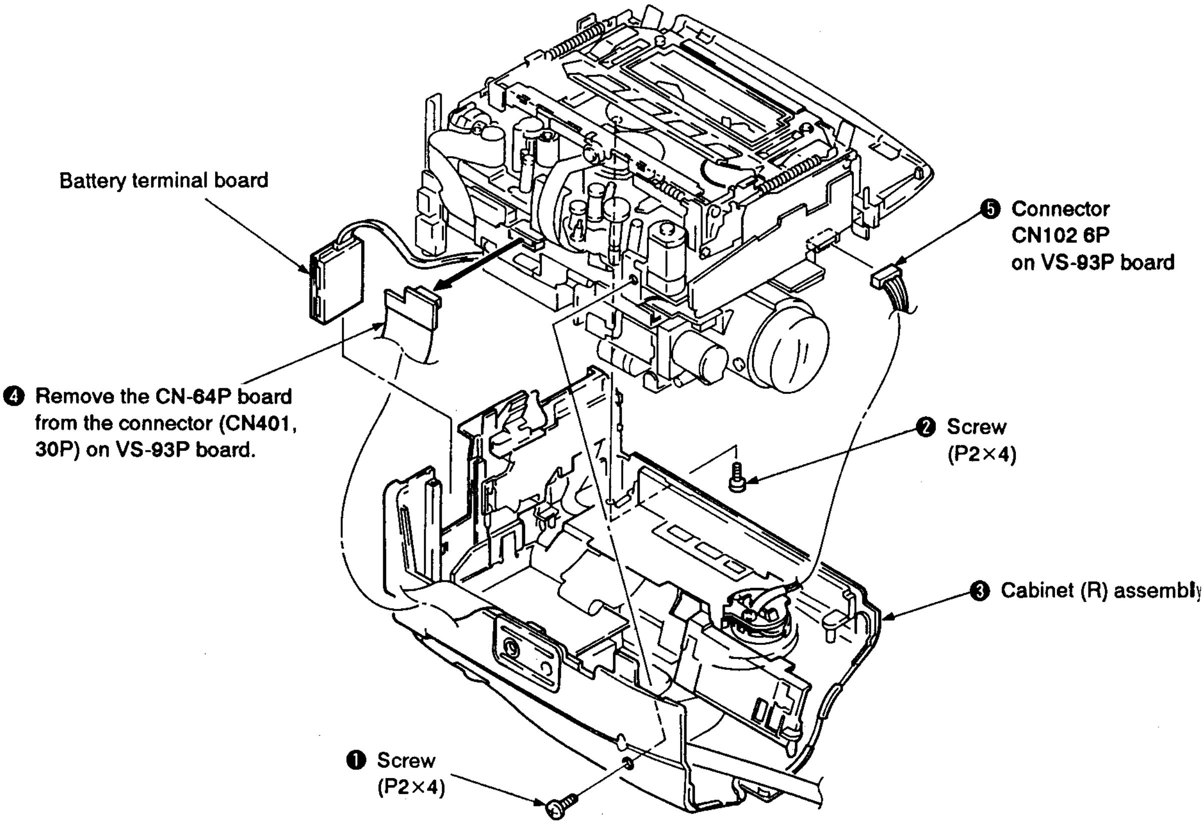

❸ Screw (P2×4)
❺ Cabinet (L) assembly
❻ Open the jack cover in the arrow direction
❽ Terminal board (JK-3100)
❼ Two screws (BTP2×5)
❶ Two screws (P2×4)
❷ Two screws (P2×4)
❹ Remove the terminal board (JK-3100) from the connector (CN101, 10P) on VS-93P board

2-3. REMOVAL OF CASSETTE LID ASSEMBLY



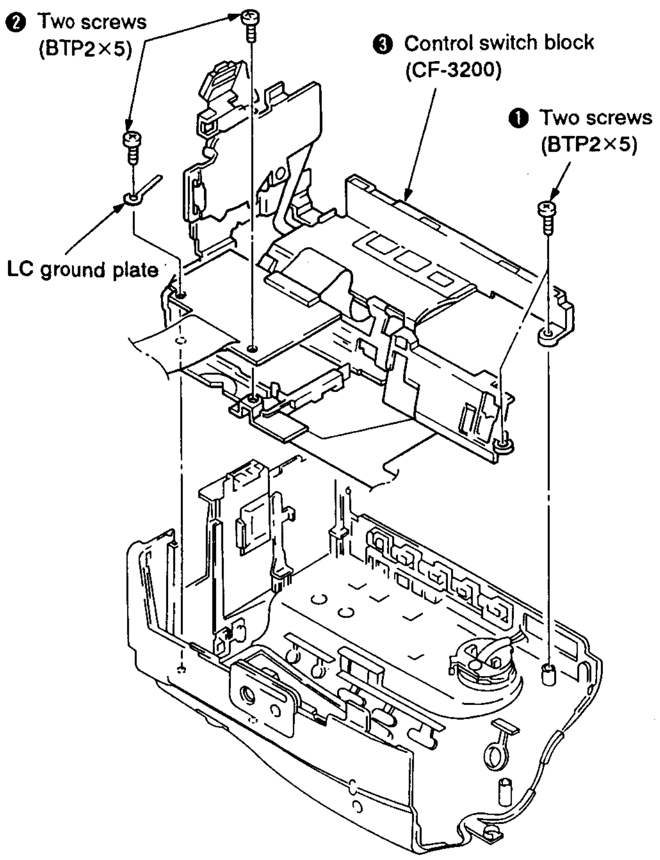
❶ Two screws
(special screw M1.4)
Two claws
❷ Remove the cassette lid assembly
in the arrow direction
(with removing the claw).

2-4. REMOVAL OF CABINET (R) ASSEMBLY

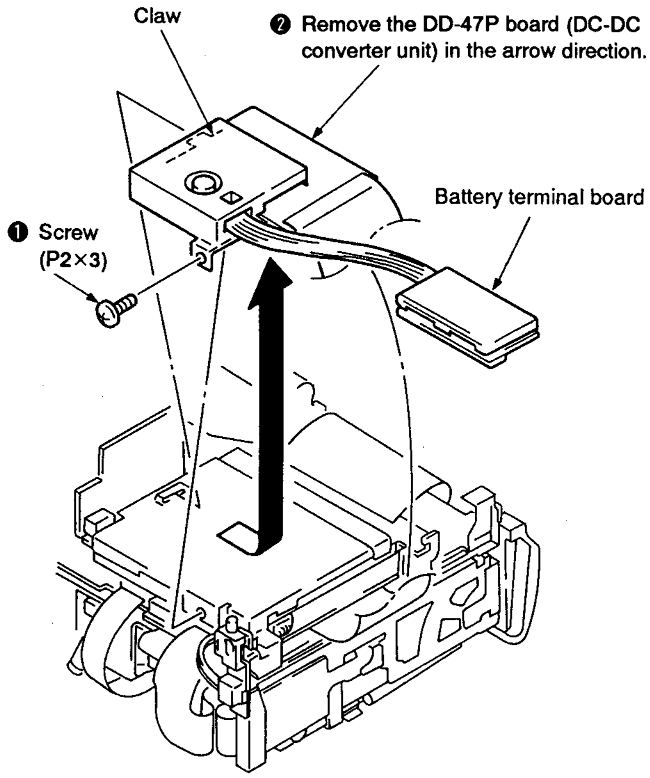


Battery terminal board
❺ Connector
CN102 6P
on VS-93P board
❹ Remove the CN-64P board
from the connector (CN401,
30P) on VS-93P board.
❷ Screw
(P2×4)
❸ Cabinet (R) assembl
❶ Screw
(P2×4)

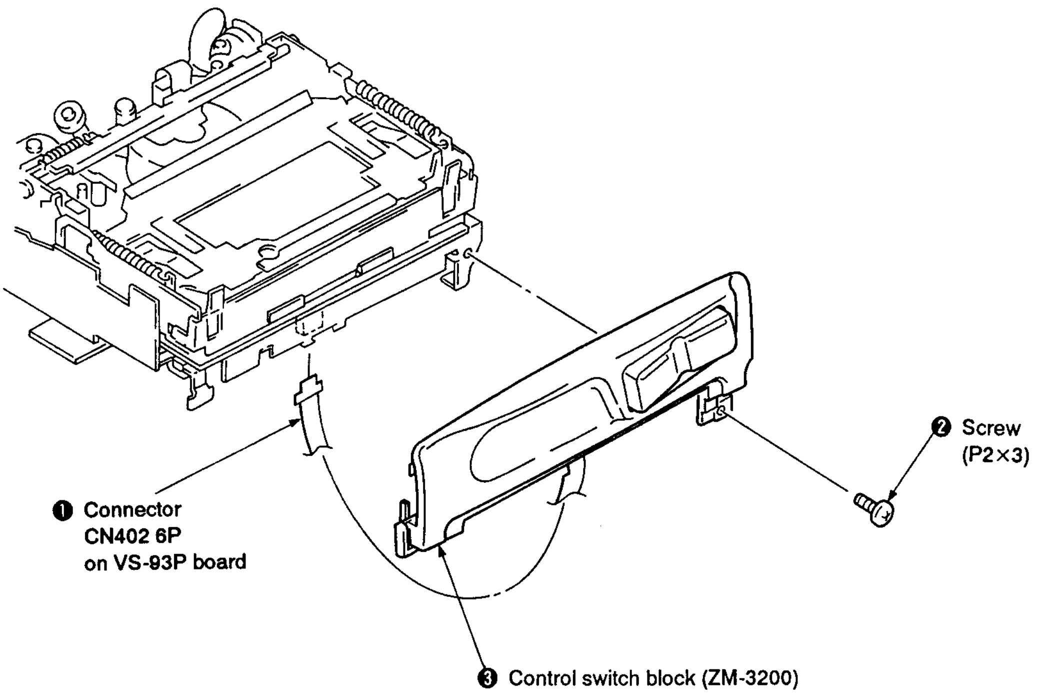
2-5. REMOVAL OF CONTROL SWITCH BLOCK (CF-3200)


❷ Two screws (BTP2×5)
❸ Control switch block (CF-3200)
❶ Two screws (BTP2×5)
LC ground plate

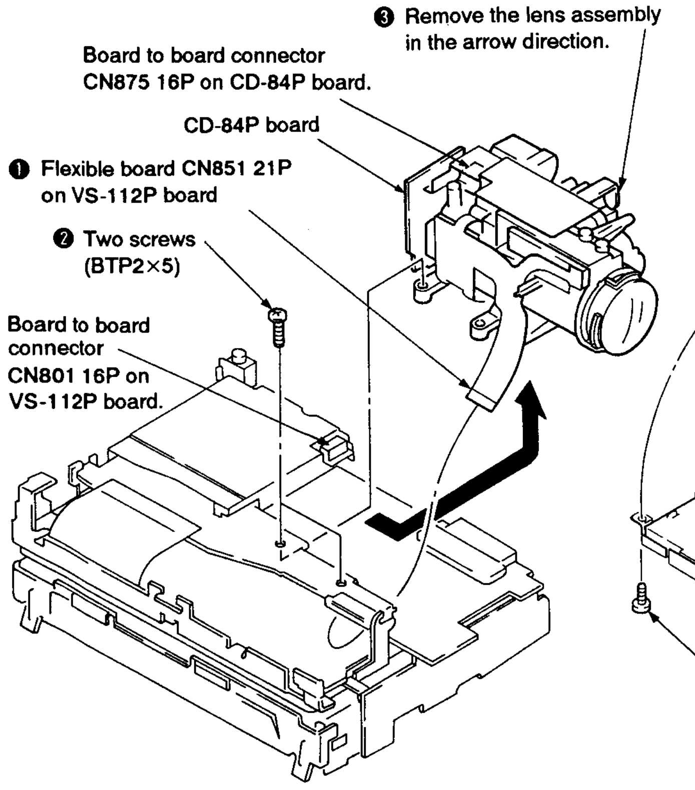
2-6. REMOVAL OF DD-47P BOARD (DC-DC CONVERTER UNIT)


Claw
❷ Remove the DD-47P board (DC-DC converter unit) in the arrow direction.
Battery terminal board
❶ Screw (P2×3)

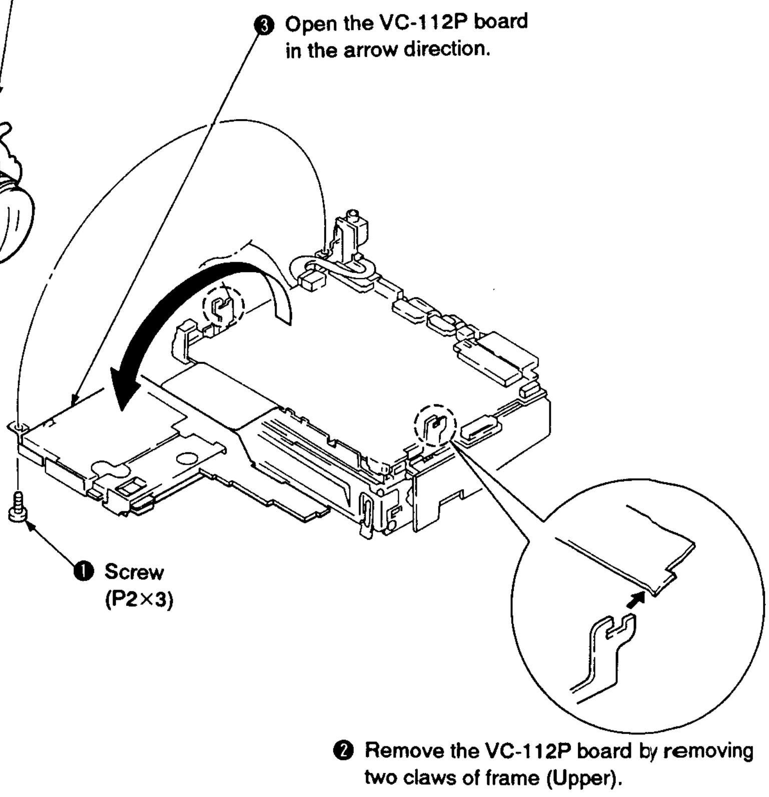
2-7. REMOVAL OF CONTROL SWITCH BLOCK (ZM-3200)


❶ Connector CN402 6P on VS-93P board
❷ Screw (P2×3)
❸ Control switch block (ZM-3200)

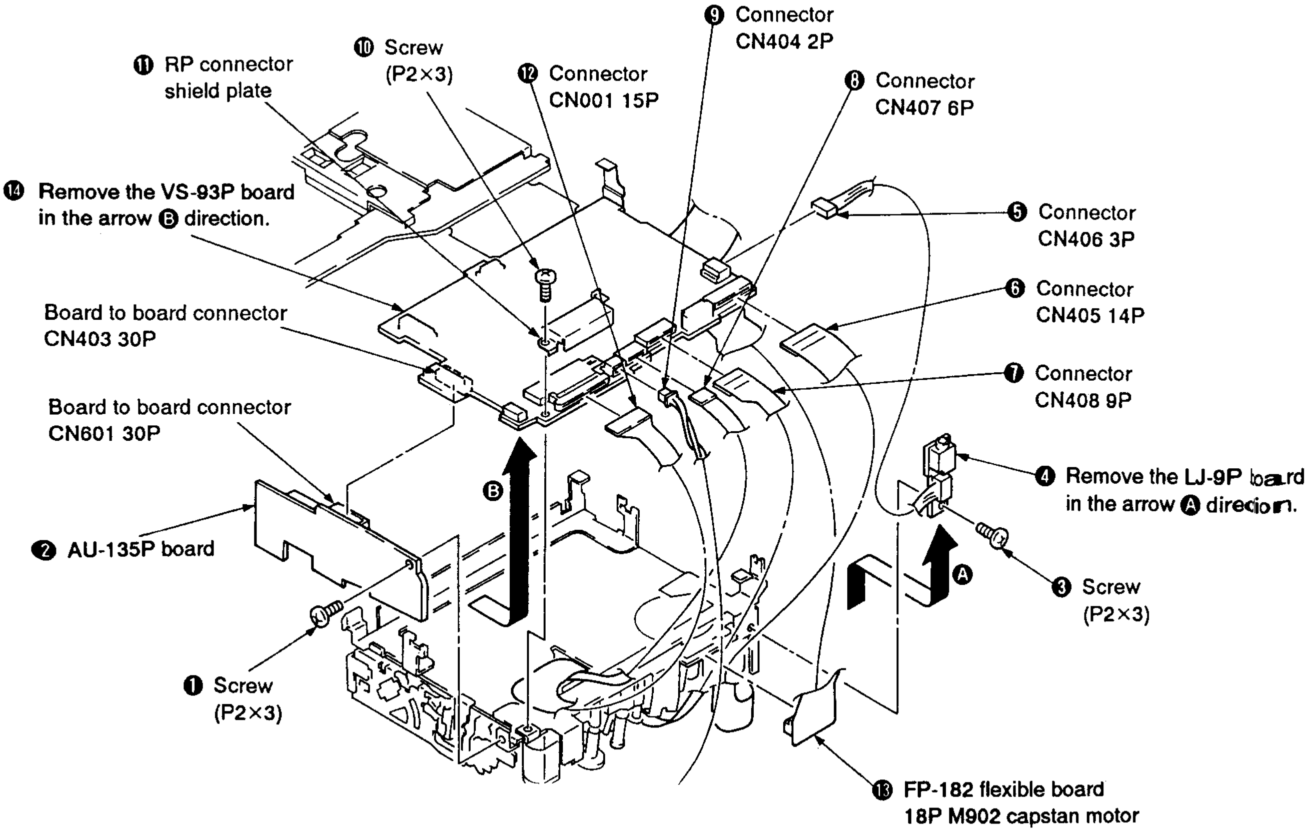
2-8. REMOVAL OF LENS ASSEMBLY (CD-84P BOARD)


③ Remove the lens assembly in the arrow direction.
Board to board connector CN875 16P on CD-84P board.
CD-84P board
① Flexible board CN851 21P on VS-112P board
② Two screws (BTP2×5)
Board to board connector CN801 16P on VS-112P board.

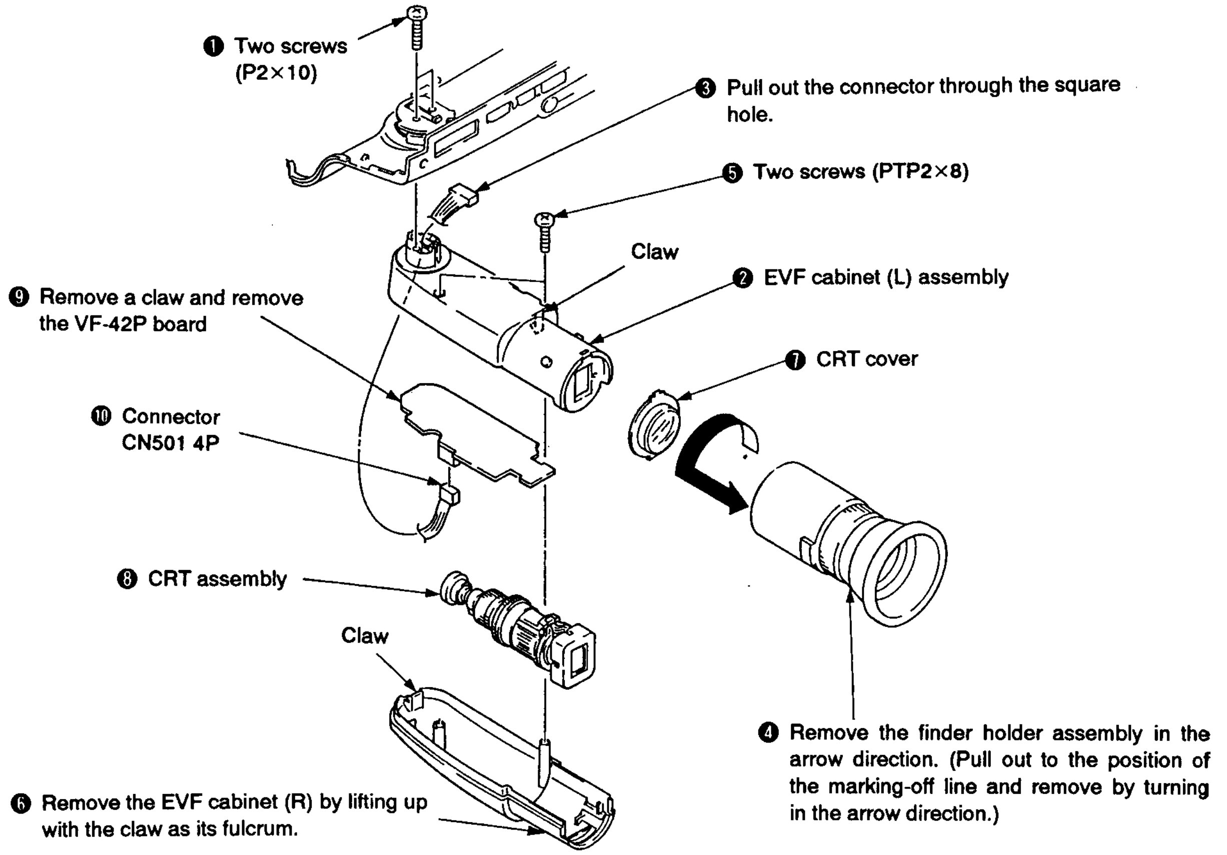
2-9. OPENING OF VC-112P BOARD


③ Open the VC-112P board in the arrow direction.
① Screw (P2×3)
② Remove the VC-112P board by removing two claws of frame (Upper).

2-10. REMOVAL OF VS-93P BOARD


⑪ RP connector shield plate
⑩ Screw (P2×3)
⑫ Connector CN001 15P
⑨ Connector CN404 2P
⑧ Connector CN407 6P
⑭ Remove the VS-93P board in the arrow Ⓑ direction.
⑤ Connector CN406 3P
⑥ Connector CN405 14P
Board to board connector CN403 30P
⑦ Connector CN408 9P
Board to board connector CN601 30P
④ Remove the LJ-9P board in the arrow Ⓐ direction.
Ⓑ
② AU-135P board
Ⓐ
③ Screw (P2×3)
① Screw (P2×3)
⑬ FP-182 flexible board 18P M902 capstan motor

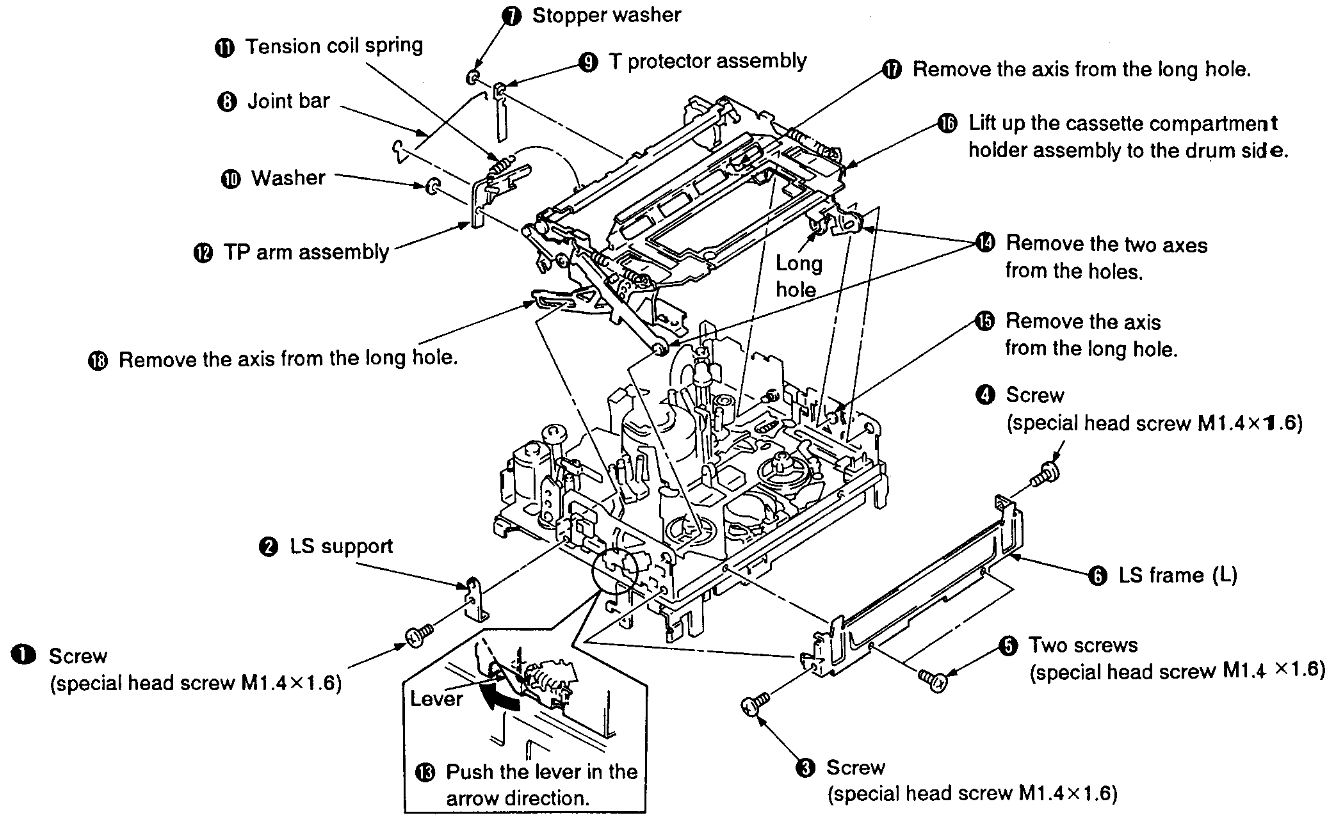
2-11. REMOVAL OF EVF ASSEMBLY (VF-42P BOARD)


❶ Two screws (P2×10)
❸ Pull out the connector through the square hole.
❺ Two screws (PTP2×8)
Claw
❾ Remove a claw and remove the VF-42P board
❷ EVF cabinet (L) assembly
❼ CRT cover
❿ Connector CN501 4P
❽ CRT assembly
Claw
❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)
❻ Remove the EVF cabinet (R) by lifting up with the claw as its fulcrum.

2-12. REMOVAL OF CASSETTE COMPARTMENT HOLDER ASSEMBLY

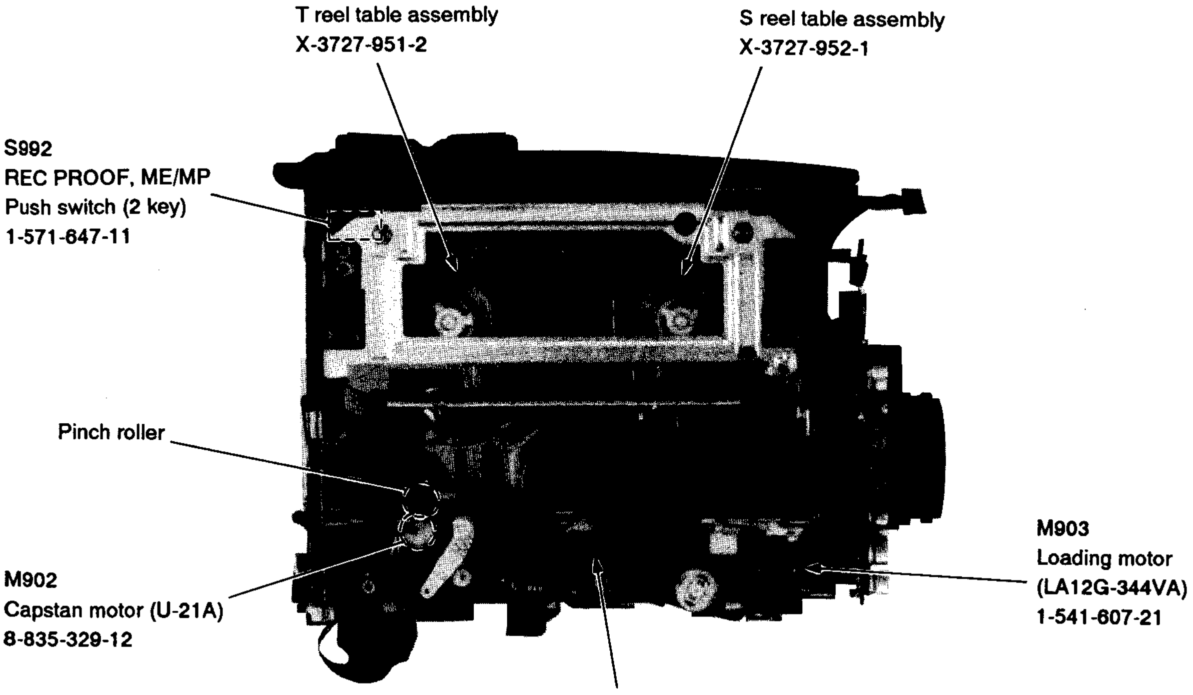
In the beginning, set to USE mode.

(When setting to USE mode, see "2-4. Handing of Mode Selector" in "8 mm video mechanical adjustment manual II FL Mechanism (Q mechanism)".)


❼ Stopper washer
⓫ Tension coil spring
❾ T protector assembly
⓱ Remove the axis from the long hole.
❽ Joint bar
⓰ Lift up the cassette compartment holder assembly to the drum side.
❿ Washer
⓬ TP arm assembly
Long hole
⓮ Remove the two axes from the holes.
⓲ Remove the axis from the long hole.
⓯ Remove the axis from the long hole.
❹ Screw (special head screw M1.4×1.6)
❷ LS support
❻ LS frame (L)
❶ Screw (special head screw M1.4×1.6)
Lever
⓭ Push the lever in the arrow direction.
❺ Two screws (special head screw M1.4 ×1.6)
❸ Screw (special head screw M1.4×1.6)

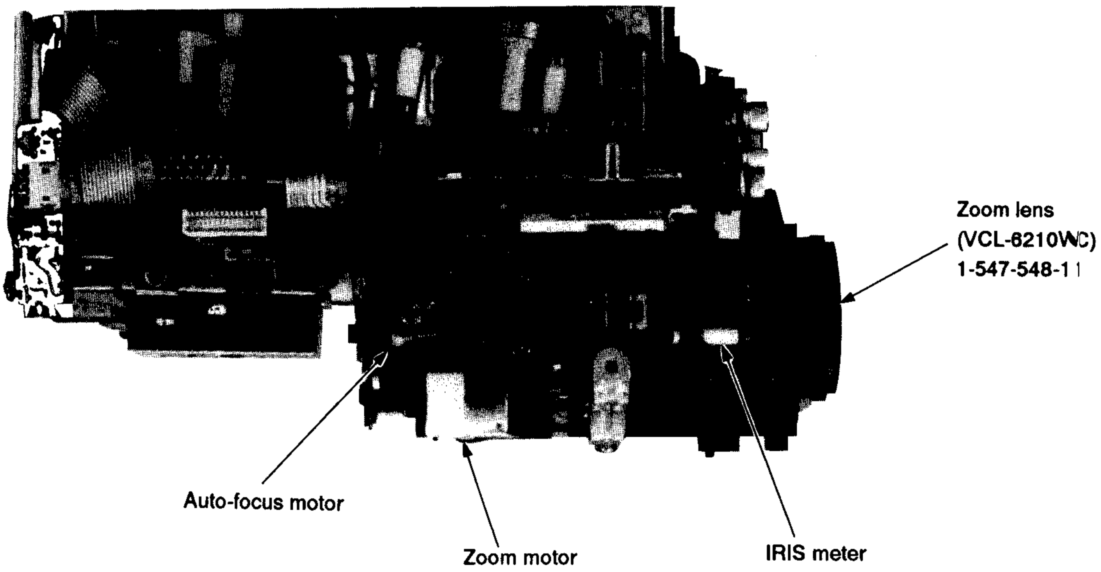
2-13. INTERNAL VIEWS

— Left side —


T reel table assembly
X-3727-951-2
S reel table assembly
X-3727-952-1
S992
REC PROOF, ME/MP
Push switch (2 key)
1-571-647-11
Pinch roller
M902
Capstan motor (U-21A)
8-835-329-12
M903
Loading motor
(LA12G-344VA)
1-541-607-21
M901

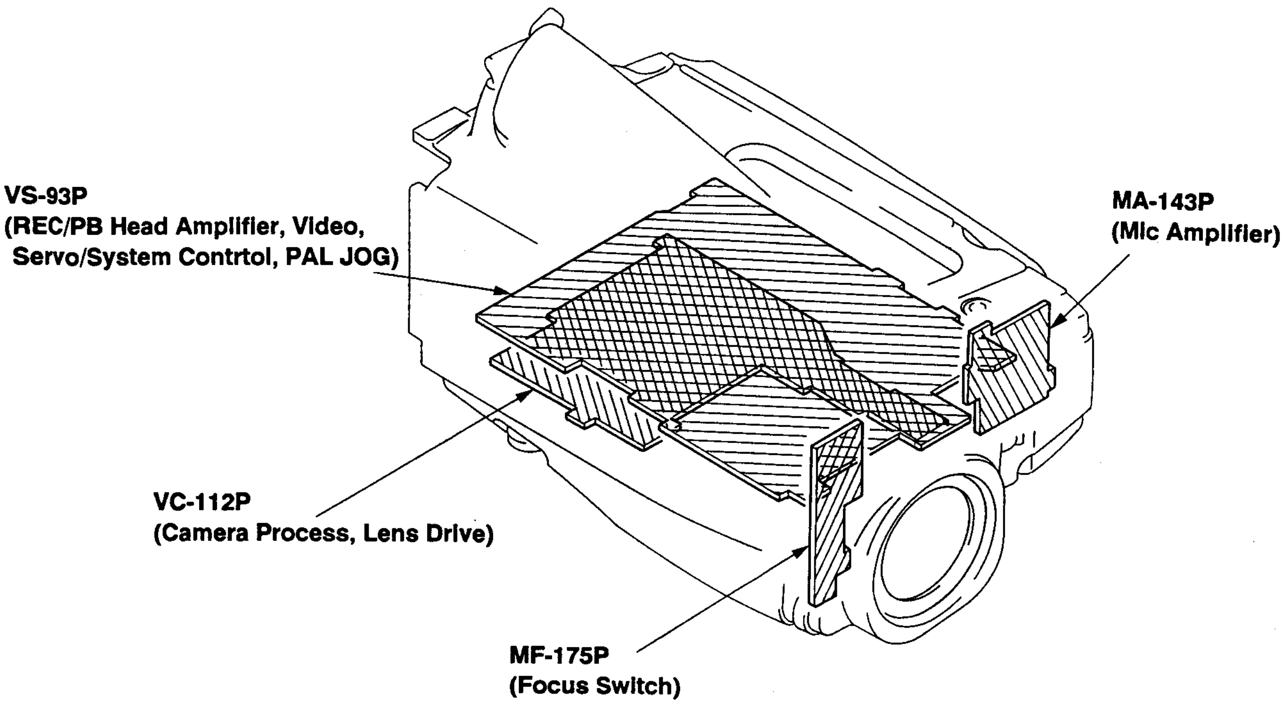
Drum assembly	A-7048-534-A (DGH-80A-R) (AEP, UK)
	A-7048-214-A (DGH-37A-R) (E, Australian, Tourist)
Rotary upper drum assembly	A-7049-461-A (DGR-80-R-(1)) (AEP, UK) (Color mark: Green, Green/Red, Black, Black/Red)
	A-7049-197-A (DGR-37-R-(1)) (E, Australian, Tourist) (Color mark: Green, Green/Red, Black, Black/Red)
	A-7049-464-A (DGR-80-R-(2)) (AEP, UK) (Color mark: Red, Red/Red, Blue, Blue/Red)
	A-7049-198-A (DGR-37-R-(2)) (E, Australian, Tourist) (Color mark: Red, Red/Red, Blue, Blue/Red)

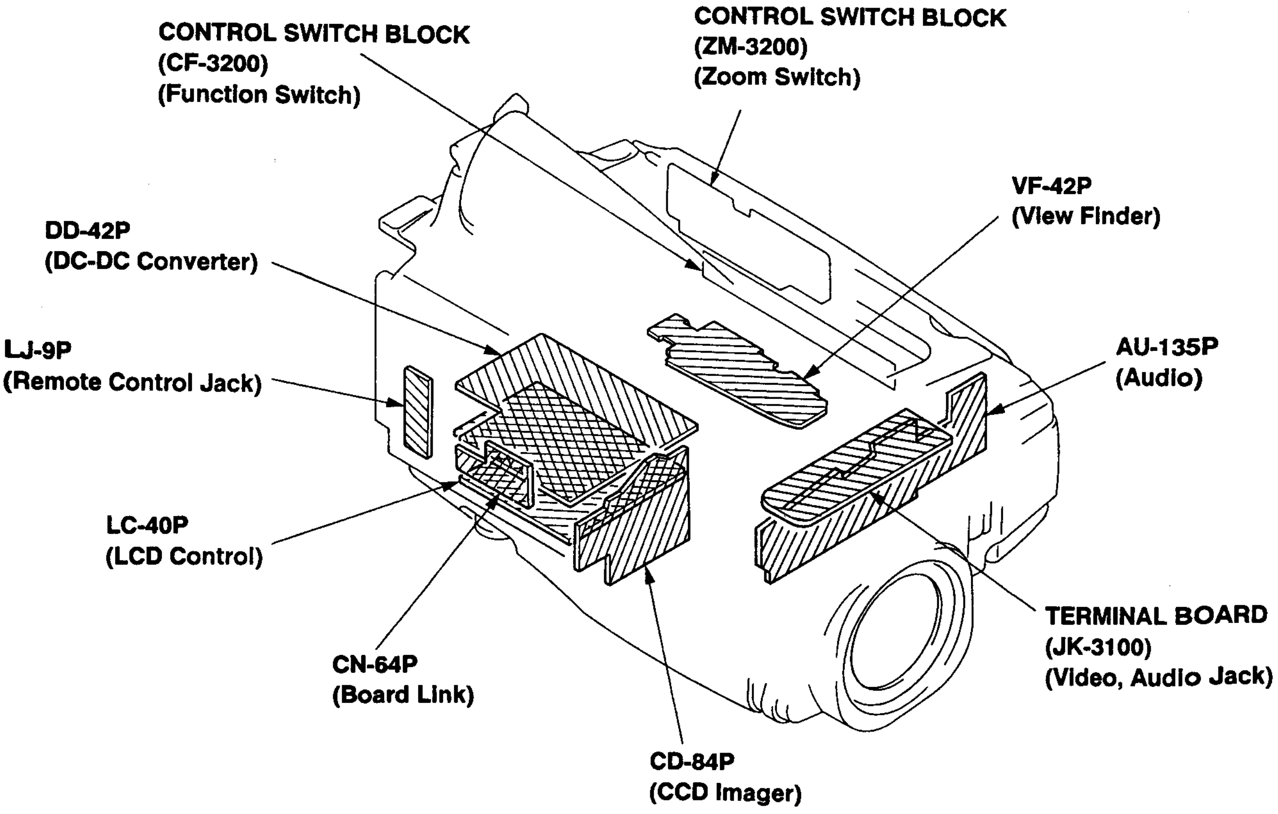
— Lower side —


Zoom lens
(VCL-6210WC)
1-547-548-11
Auto-focus motor
Zoom motor
IRIS meter

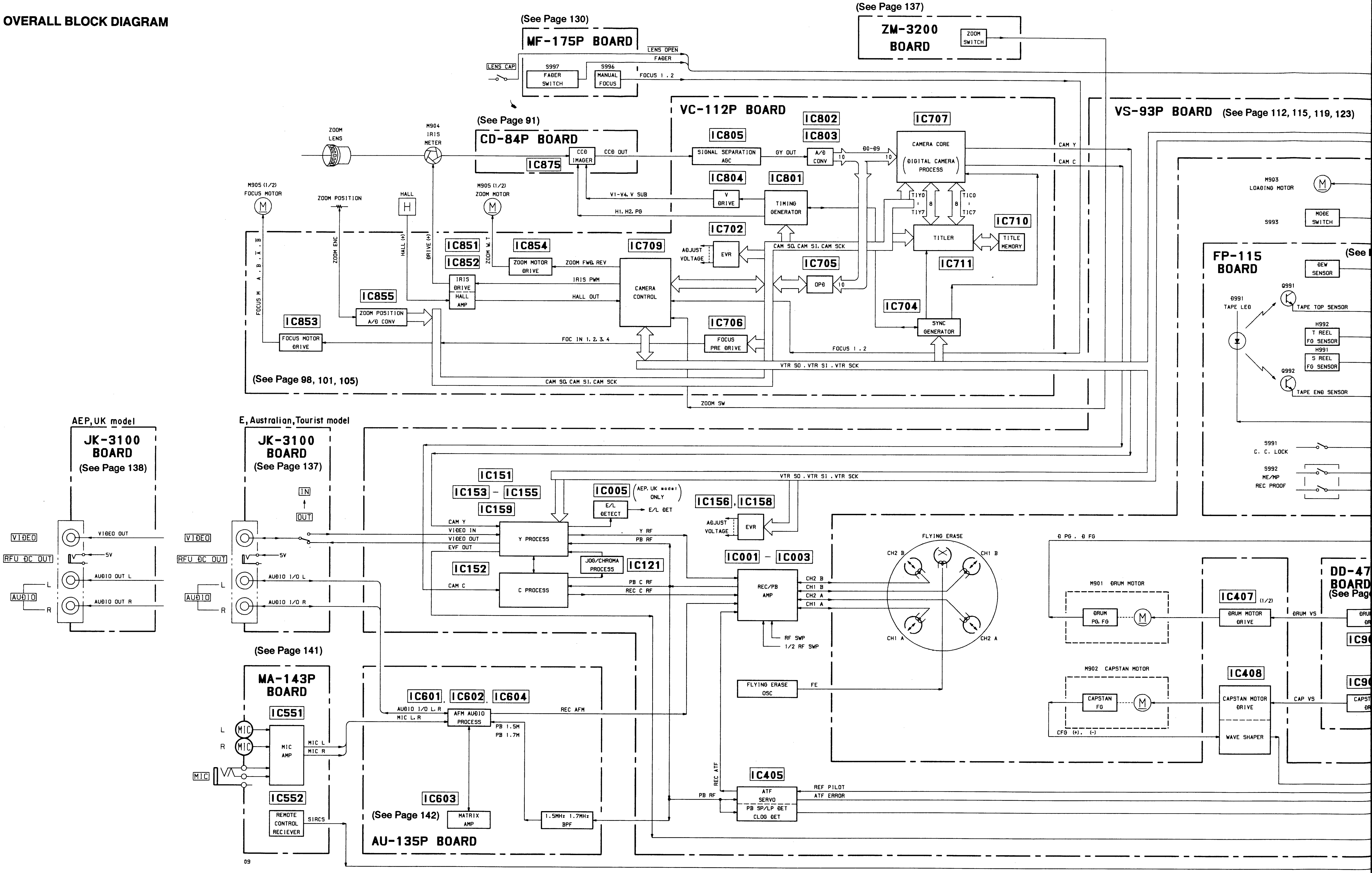
SECTION 3
DIAGRAMS

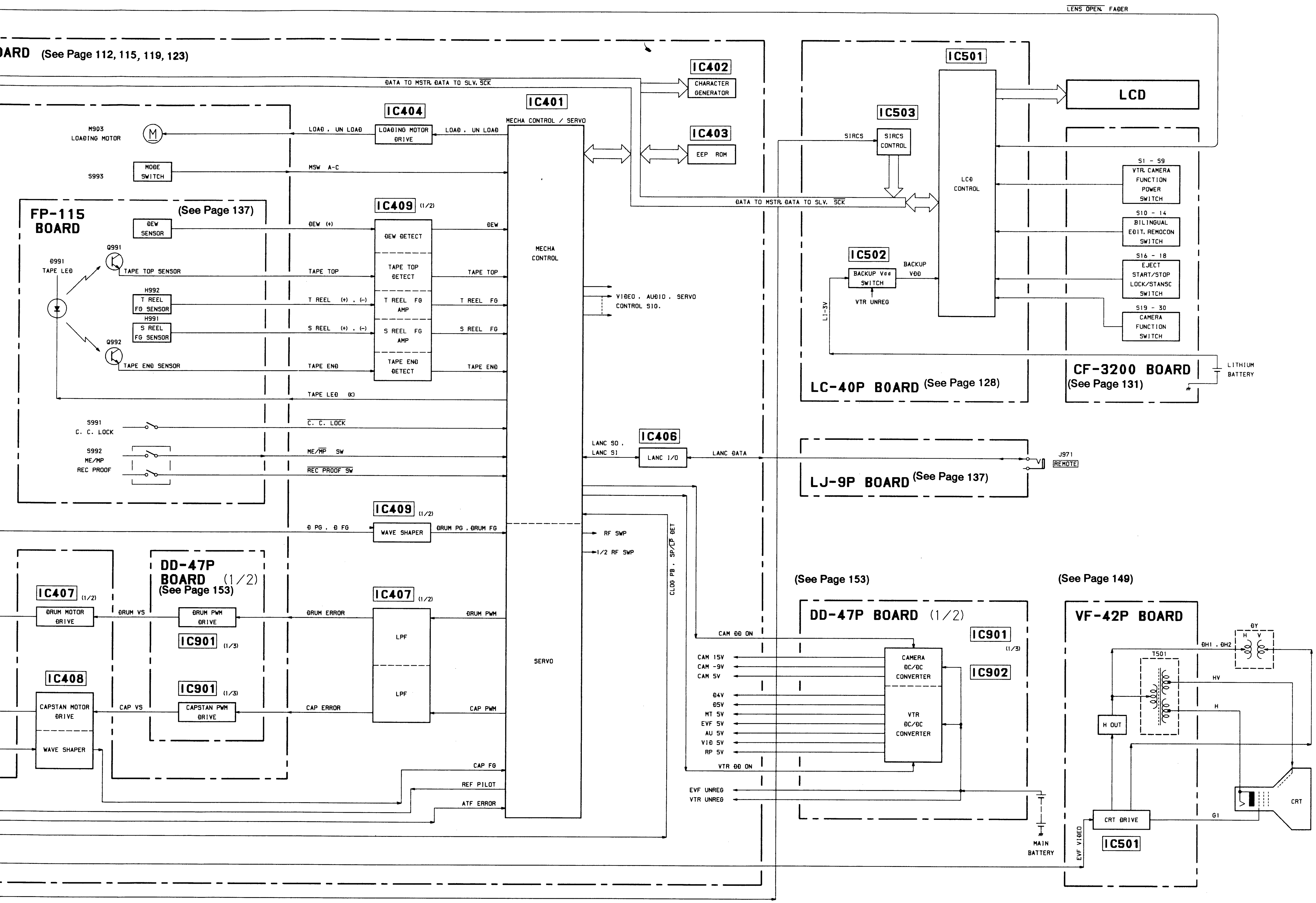
3-1. CIRCUIT BOARDS LOCATION


VS-93P
(REC/PB Head Amplifier, Video,
Servo/System Contrtol, PAL JOG)
VC-112P
(Camera Process, Lens Drive)
MF-175P
(Focus Switch)
MA-143P
(Mic Amplifier)

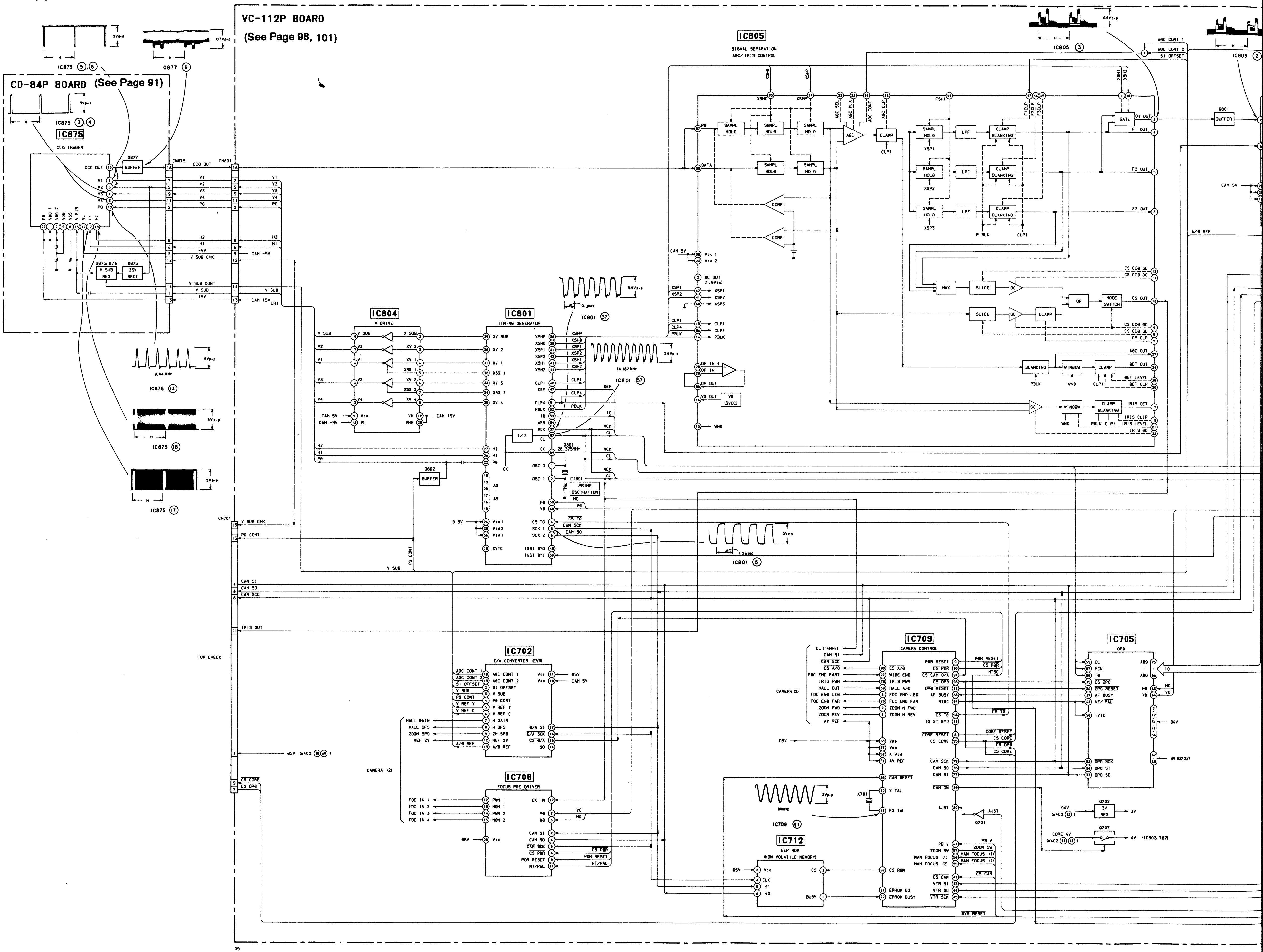

CONTROL SWITCH BLOCK
(CF-3200)
(Function Switch)
CONTROL SWITCH BLOCK
(ZM-3200)
(Zoom Switch)
VF-42P
(View Finder)
DD-42P
(DC-DC Converter)
LJ-9P
(Remote Control Jack)
AU-135P
(Audio)
LC-40P
(LCD Control)
TERMINAL BOARD
(JK-3100)
(Video, Audio Jack)
CN-64P
(Board Link)
CD-84P
(CCD Imager)

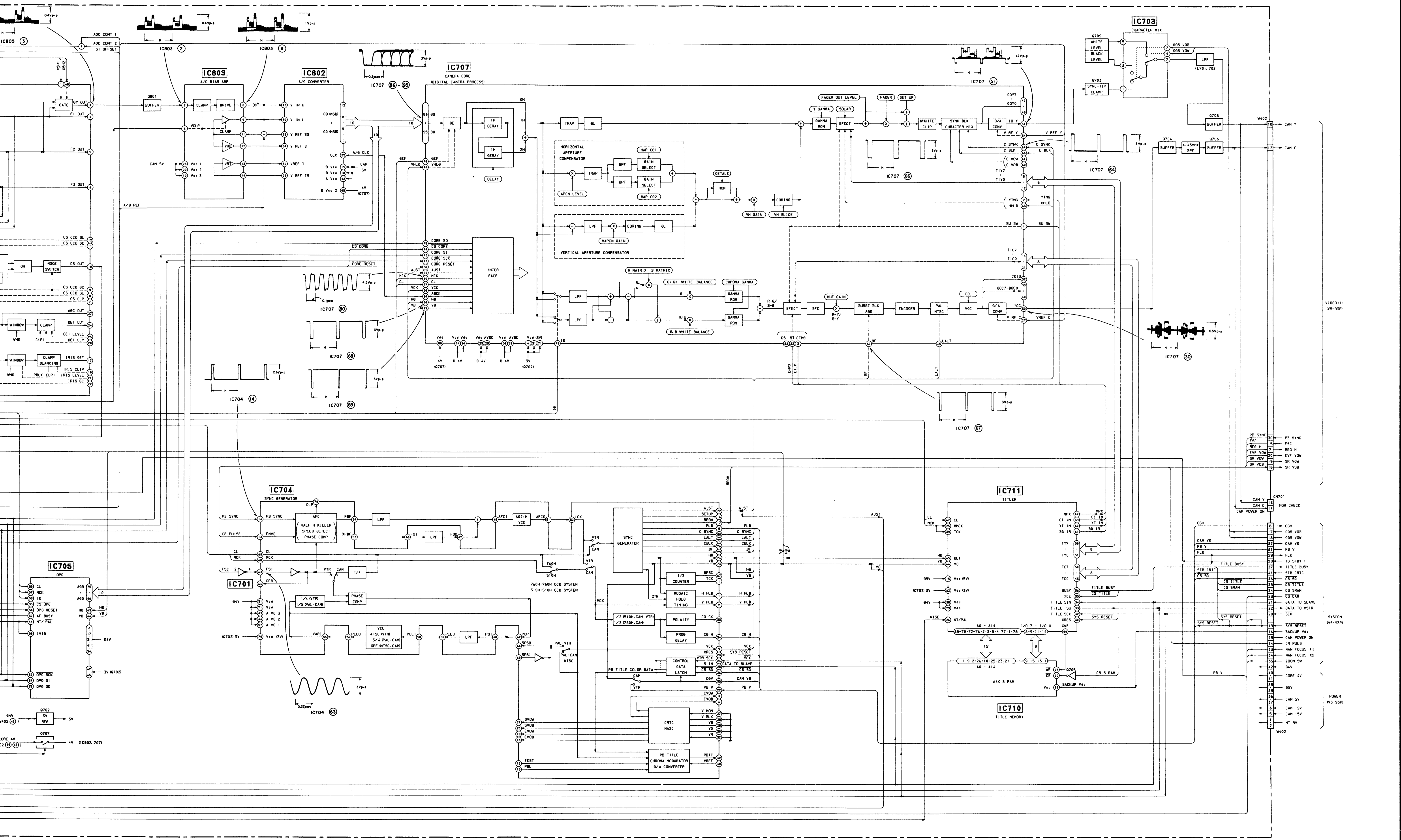
3-2. OVERALL BLOCK DIAGRAM


(See Page 130)
MF-175P BOARD
LENS CAP
S997 FADER SWITCH
S996 MANUAL FOCUS
LENS OPEN
FADER
FOCUS 1 . 2
(See Page 137)
ZM-3200 BOARD
ZOOM SWITCH
(See Page 91)
CD-84P BOARD
CCD IMAGER
CCD OUT
IC875
ZOOM LENS
M904 IRIS METER
M905 (1/2) FOCUS MOTOR
ZOOM POSITION
HALL
M905 (1/2) ZOOM MOTOR
FOCUS M A . B . Ā . B̄
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM W.T
IC851
IC852
IRIS DRIVE
HALL AMP
IC854
ZOOM MOTOR DRIVE
ZOOM FWD. REV
IC855
ZOOM POSITION A/D CONV
IC853
FOCUS MOTOR DRIVE
IC709
CAMERA CONTROL
IRIS PWM
HALL OUT
FOC IN 1. 2. 3. 4
(See Page 98, 101, 105)
CAM SO. CAM SI. CAM SCK
VC-112P BOARD
IC805
SIGNAL SEPARATION AGC
GY OUT
IC802
IC803
A/D CONV
10
D0-D9
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC804
V DRIVE
IC801
TIMING GENERATOR
V1-V4. V SUB
H1. H2. PG
TIY0 ~ TIY7
8
TIC0 ~ TIC7
IC702
ADJUST VOLTAGE
EVR
CAM SO. CAM SI. CAM SCK
TITLER
IC710
TITLE MEMORY
IC705
OPD
IC711
IC704
SYNC GENERATOR
IC706
FOCUS PRE DRIVE
FOCUS 1 . 2
VTR SO . VTR SI . VTR SCK
ZOOM SW
CAM Y
CAM C
VS-93P BOARD (See Page 112, 115, 119, 123)
M903 LOADING MOTOR
S993
MODE SWITCH
FP-115 BOARD
(See
DEW SENSOR
Q991
TAPE TOP SENSOR
D991 TAPE LED
H992 T REEL FG SENSOR
H991 S REEL FG SENSOR
Q992
TAPE END SENSOR
S991 C. C. LOCK
S992 ME/MP REC PROOF
AEP, UK model
JK-3100 BOARD (See Page 138)
VIDEO
RFU DC OUT
AUDIO
L
R
VIDEO OUT
5V
AUDIO OUT L
AUDIO OUT R
E, Australian, Tourist model
JK-3100 BOARD (See Page 137)
IN
OUT
AUDIO I/O L
AUDIO I/O R
IC151
IC153 - IC155
IC159
CAM Y
VIDEO IN
VIDEO OUT
EVF OUT
Y PROCESS
IC005
(AEP, UK model ONLY)
E/L DETECT
E/L DET
IC156, IC158
ADJUST VOLTAGE
EVR
Y RF
PB RF
JOG/CHROMA PROCESS
IC121
IC152
CAM C
C PROCESS
PB C RF
REC C RF
IC001 - IC003
REC/PB AMP
CH2 B
CH1 B
CH2 A
CH1 A
RF SWP
1/2 RF SWP
FLYING ERASE
FLYING ERASE OSC
FE
D PG . D FG
M901 DRUM MOTOR
DRUM PG. FG
IC407 (1/2)
DRUM MOTOR DRIVE
DRUM VS
M902 CAPSTAN MOTOR
CAPSTAN FG
IC408
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CAP VS
CFG (+), (-)
DD-47 BOARD (See Pag
IC9
CAPST
(See Page 141)
MA-143P BOARD
IC551
MIC
MIC AMP
MIC L
MIC R
IC552
REMOTE CONTROL RECIEVER
SIRCS
IC601, IC602, IC604
AUDIO I/O L. R
MIC L. R
AFM AUDIO PROCESS
REC AFM
PB 1.5M
PB 1.7M
IC603
MATRIX AMP
1.5MHz 1.7MHz BPF
(See Page 142)
AU-135P BOARD
REC ATF
PB RF
IC405
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
D9


ARD (See Page 112, 115, 119, 123)
LENS OPEN. FADER
DATA TO MSTR. DATA TO SLV. SCK
IC402
CHARACTER GENERATOR
IC403
EEP ROM
IC401
MECHA CONTROL / SERVO
IC404
LOADING MOTOR DRIVE
LOAD . UN LOAD
M903 LOADING MOTOR
M
S993
MODE SWITCH
MSW A-C
FP-115 BOARD
(See Page 137)
DEW SENSOR
DEW (+)
DEW
IC409 (1/2)
DEW DETECT
D991 TAPE LED
Q991
TAPE TOP SENSOR
TAPE TOP
TAPE TOP DETECT
H992
T REEL FG SENSOR
T REEL (+) . (-)
T REEL FG AMP
T REEL FG
H991
S REEL FG SENSOR
S REEL (+) . (-)
S REEL FG AMP
S REEL FG
Q992
TAPE END SENSOR
TAPE END
TAPE END DETECT
TAPE LED (K)
MECHA CONTROL
VIDEO . AUDIO . SERVO CONTROL SIG.
S991 C. C. LOCK
C. C. LOCK
S992 ME/MP REC PROOF
ME/MP SW
REC PROOF SW
LANC SO . LANC SI
IC406
LANC I/O
LANC DATA
IC409 (1/2)
D PG . D FG
WAVE SHAPER
DRUM PG . DRUM FG
RF SWP
1/2 RF SWP
CLOG PB . SP/LP DET
DD-47P BOARD (1/2)
(See Page 153)
IC407 (1/2)
DRUM MOTOR DRIVE
DRUM VS
DRUM PWM DRIVE
IC901 (1/3)
DRUM ERROR
IC407 (1/2)
LPF
DRUM PWM
SERVO
IC408
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CAP VS
IC901 (1/3)
CAPSTAN PWM DRIVE
CAP ERROR
LPF
CAP PWM
CAP FG
REF PILOT
ATF ERROR
IC501
LCD
LCD CONTROL
IC503
SIRCS
SIRCS CONTROL
DATA TO MSTR. DATA TO SLV. SCK
IC502
BACKUP Vdd SWITCH
BACKUP VDD
VTR UNREG
LI-3V
S1 - S9 VTR. CAMERA FUNCTION POWER SWITCH
S10 - 14 BILINGUAL EDIT. REMOCON SWITCH
S16 - 18 EJECT START/STOP LOCK/STANSC SWITCH
S19 - 30 CAMERA FUNCTION SWITCH
LC-40P BOARD (See Page 128)
CF-3200 BOARD (See Page 131)
LITHIUM BATTERY
J971 REMOTE
LJ-9P BOARD (See Page 137)
(See Page 153)
DD-47P BOARD (1/2)
IC901 (1/3)
IC902
CAM DD ON
CAM 15V
CAM -9V
CAM 5V
D4V
D5V
MT 5V
EVF 5V
AU 5V
VID 5V
RP 5V
VTR DD ON
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
EVF UNREG
VTR UNREG
MAIN BATTERY
(See Page 149)
VF-42P BOARD
DY
H V
DH1 . DH2
T501
HV
H
H OUT
CRT
G1
CRT DRIVE
IC501
EVF VIDEO

3-3. CAMERA (1) BLOCK DIAGRAM


CD-84P BOARD (See Page 91)
IC875
CCD IMAGER
Q877 BUFFER
Q875, 876 V SUB REG
Q875 23V RECT
CN875
CN801
IC875 ⑤,⑥
Q877 ⑤
IC875 ③,④
IC875 ⑬
IC875 ⑱
IC875 ⑰
VC-112P BOARD
(See Page 98, 101)
IC804
V DRIVE
IC801
TIMING GENERATOR
IC801 ㊲
IC801 ㊲
IC801 ⑤
X801 28.375MHz
CT801 PRIME OSCIRATION
Q802 BUFFER
IC805
SIGNAL SEPARATION AGC/IRIS CONTROL
IC805 ③
IC803 ②
Q801 BUFFER
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
COMP
MAX
SLICE
OR
MODE SWITCH
BLANKING
WINDOW
GATE
CN701
FOR CHECK
IC702
D/A CONVERTER (EVR)
CAMERA (2)
IC706
FOCUS PRE DRIVER
IC709
CAMERA CONTROL
IC709 ④1
X701
IC712
EEP ROM (NON VOLATILE MEMORY)
IC705
DPU
Q701
Q702 3V REG
Q707
D4V (M402 ⑫)
CORE 4V (M402 ⑪)
4V (IC802, 707)
3V (Q702)
D5V (M402 ㉚㉛)


IC803
A/D BIAS AMP
IC802
A/D CONVERTER
IC707
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC703
CHARACTER MIX
IC704
SYNC GENERATOR
IC701
IC705
OPD
IC711
TITLER
IC710
TITLE MEMORY
HORIZONTAL APERTURE COMPENSATOR
VERTICAL APERTURE COMPENSATOR
INTER FACE
1H DELAY
R MATRIX B MATRIX
R-G WHITE BALANCE
B WHITE BALANCE
CHROMA GAMMA
GAMMA ROM
BURST BLK ADD
ENCODER
PAL NTSC
D/A CONV
SYNC BLK CHARACTER MIX
WHITE CLIP
FADER OUT LEVEL
FADER
SET UP
Y GAMMA
SOLAR
EFECT
DETALE
CORING
VH GAIN
VH SLICE
HALF H KILLER SPEED DETECT PHASE COMP
SYNC GENERATOR
MOSAIC HOLD TIMING
POLAITY
PROG DELAY
CONTROL DATA LATCH
CRTC MASC
PB TITLE CHROMA MODURATOR D/A CONVERTER
VCO 4FSC (VTR) 5/4 (PAL CAM) OFF (NTSC CAM)
PHASE COMP
760H:760H CCD SYSTEM
510H:510H CCD SYSTEM
64K S RAM
Q702 3V REG
Q707
Q801 BUFFER
Q704 BUFFER
Q706 BUFFER
Q708 BUFFER
4.43MHz BPF
FL701, 702
Q709 WHITE LEVEL BLACK LEVEL
Q703 SYNC-TIP CLAMP
W402
CN701
CAM Y
CAM C
FOR CHECK
VIDEO (1) (VS-93P)
SYSCON (VS-93P)
POWER (VS-93P)
IC803 ②
IC803 ⑧
IC805 ③
IC707 (86)-(95)
IC707 (51)
IC707 (64)
IC707 (66)
IC707 (67)
IC707 (68)
IC707 (69)
IC707 (80)
IC707 (30)
IC704 ⑭
IC704 (63)

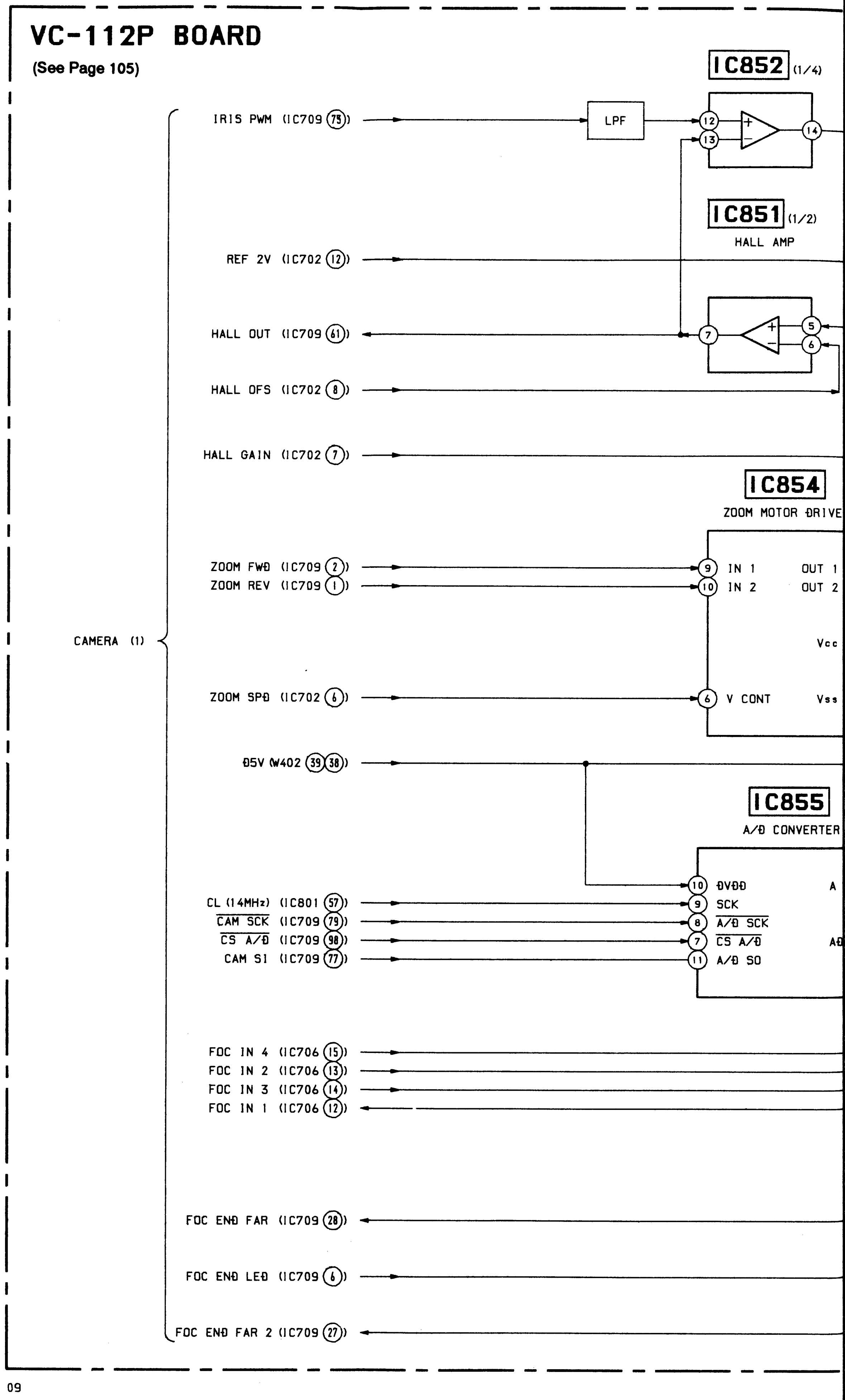
3-4. CAMERA MICROPROCESSOR PIN FUNCTION (IC709 ON VC-112P BOARD: CXP80624-285R/298R)

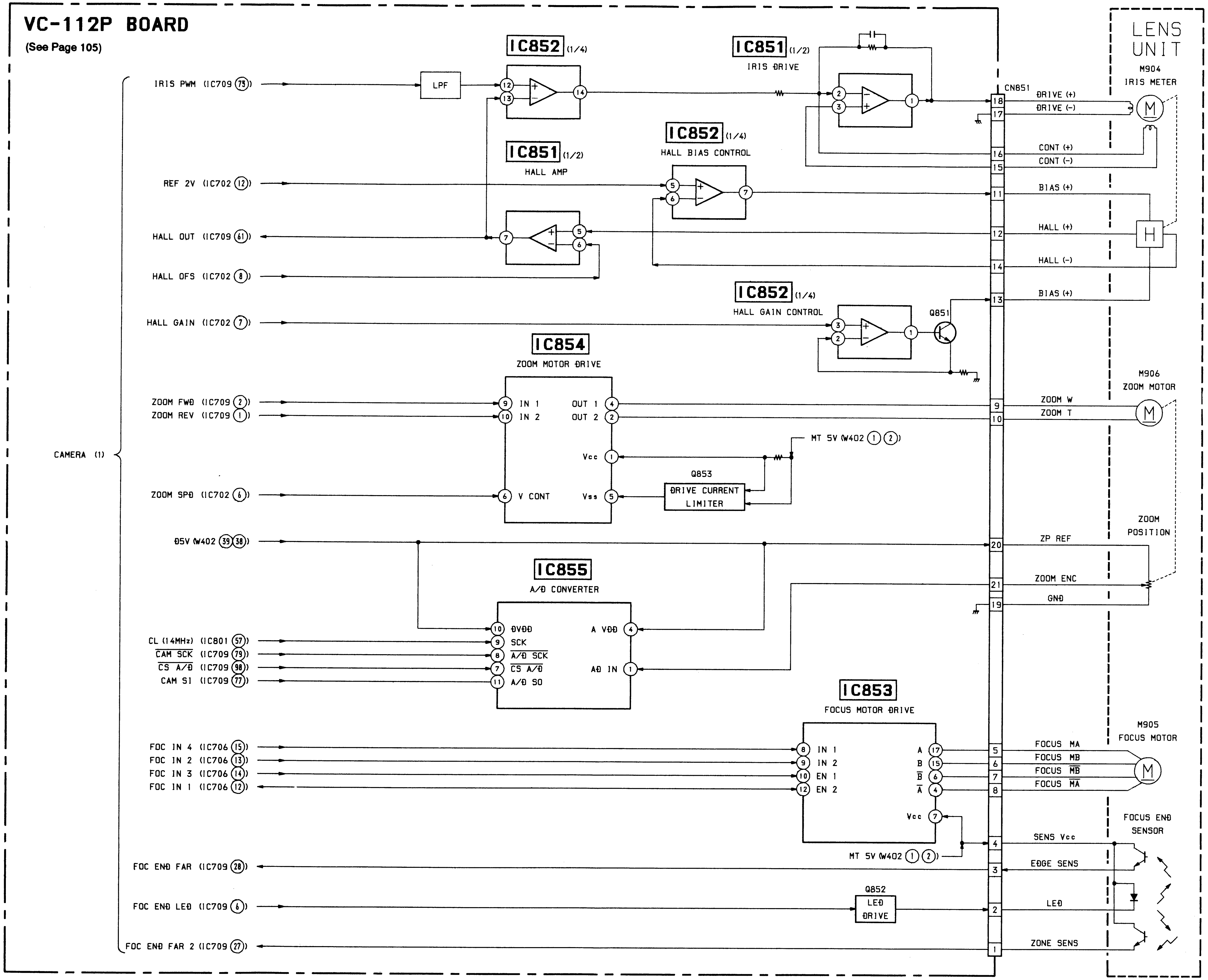
Pin No.	Signal	I/O	Function
1	ZOOM M REV	O	Zoom motor control signal. Normally “H”. 20 msec period PWM signal when rotating to WIDE.
2	ZOOM M FWD	O	Zoom motor control signal. Normally “H”. 20 msec period PWM signal when rotating to TELE.
3			Not used.
4			
5			
6	FOC END LED	O	Focus end sensor LED control signal. Normally “L”.
7	RT05/D5		Not used.
8	CORE RESET	O	Camera core (IC707 on VC-112P board) reset signal. Normally “H”. “L” when reset.
9	PDR RESET	O	Focus predriver (IC706 on VC-112P board) reset signal. Normally “H”. “L” when reset.
10			Not used.
11	TG STBY0		
12	OPD RESET	O	OPD (IC705 on VC-112P board) reset signal. “H”: camera mode. “L”: VTR mode.
13			Not used.
14			
15			
16			
17			
18			
19			
20			
21	EPROM DO	O	Connected to +5V.
22	EPROM BUSY	I	BUSY signal from EEPROM. Normally “H”. “L” pulse when data reading/writing.
23			Not used.
24			
25			Connected to +5V.
26			
27	WIDE END		Focus Zone sensor input. Normally “L”.
28	FOC END FAR	I	Focus edge sensor input. Normally “L”.
29	$\overline{\text{CAM ON}}$	O	Power supply control signal. Normally “L”.
30			Not used.
31			
32			
33			
34			
35			
36			
37	MP		Connected to GND.
38	$\overline{\text{CAM RESET}}$	I	Reset signal input. Normally “H”. “L” when reset.
39	VSS		GND
40	XTAL	O	10 MHz clock oscillation circuit.
41	EXTAL	I	
42	$\overline{\text{CS CAM}}$	I	Chip select signal from mode control microprocessor. (IC501 on LC-40P board)
43	VTR SI	I	Serial data input from mode control microprocessor.
44	VTR SO	O	Serial data output from mode control microprocessor.
45	VTR SCK	I	Serial data transfer clock.
46			Not used.
47			
48			
49			
50	AVSS		GND
51	AVREF		Analog input port reference voltage (5V).
52	AVDD		Analog input port voltage (5V).
53			Connected to GND.
54			
55	MAN FOCUS (2)	I	Manual focus input. 0 to 5 Vdc.
56	MAN FOCUS (1)	I	Manual focus input. 0 to 5 Vdc.
57	ZOOM SW	I	Zoom key input. 0V: F. TELE, 0.8V: TELE and 1.4V: F. WIDE, 2.1V: WIDE and 5V: no input.
58		I	Not used.
59	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
60		I	Connected to GND.
61			Connected to 5V.
62	PB V	I	VD signal input from mecha controler (IC401 on VS-93P board).
63	PG5/SYNC1		Connected to +5V.
64	VTR SYNC		
65	PB CTL		
66	DPG		
67			
68	AF BUSY	I	AF busy signal.
69			Not used.
70			
71			
72			
73	IRIS PWM	O	Iris control signal. 25.5 µsec period PWM signal.
74			Not used.
75			
76			
77	CAM SI	I	Serial data input.
78	CAM SO	O	Serial data output.
79	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
80	AJST	I	Adjustment timing pulse input. Normally “H”.
81	PI/TO		Not used.
82	PI/PWM		
83	PI/PO		
84	PI O		Connected to +5V.
85	PKO		
86	GND		GND
87	VDD		+5V power supply.
88	VPP		
89			Not used.
90	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC706 on VC-112P board).
91	$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC702 on VC-112P board).
92	CS ROM	O	Chip select signal to EEPROM (IC712 on VC-112P board).
93	$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC705 on VC-112P board).
94	$\overline{\text{NTSC}}$	O	NTSC: “L”, PAL: “H”.
95	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC707 on VC-112P board).
96	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-112P board).
97			Not used.
98	$\overline{\text{CS A/D}}$	O	Chip select signal to Zoom position A/D converter (IC855 on VC-112P board).
99			Not used.
100			

3-5. CAMER

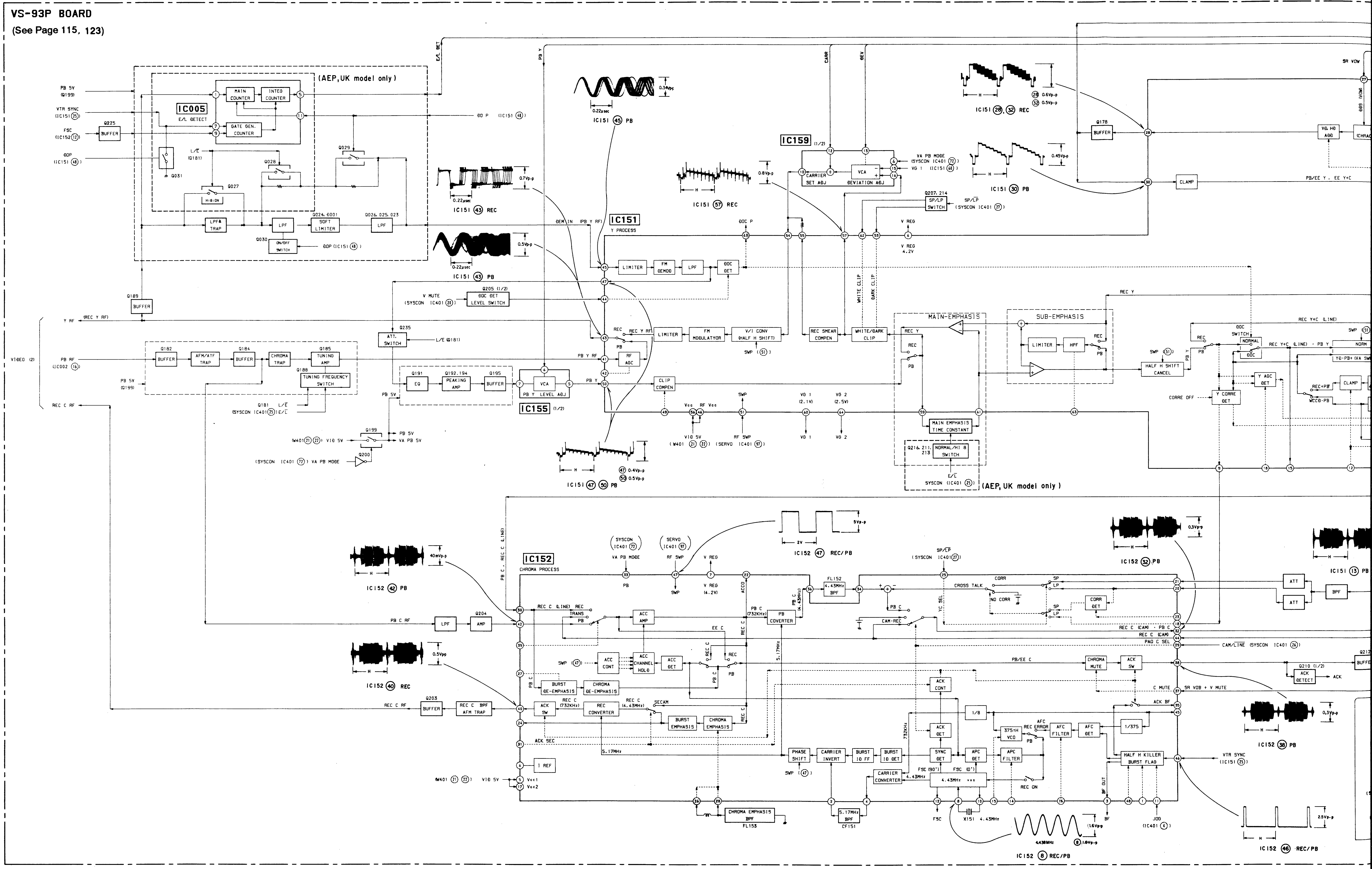
Signal	I/O	Function
AVSS		GND
AVREF		Analog input port reference voltage (5V).
AVDD		Analog input port voltage (5V).
		Connected to GND.
MAN FOCUS (2)	I	Manual focus input. 0 to 5 Vdc.
MAN FOCUS (1)	I	Manual focus input. 0 to 5 Vdc.
ZOOM SW	I	Zoom key input. 0V: F. TELE, 0.8V: TELE and 1.4V: F. WIDE, 2.1V: WIDE and 5V: no input.
	I	Not used.
HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
	I	Connected to GND.
		Connected to 5V.
PB V	I	VD signal input from mecha controler (IC401 on VS-93P board).
PG5/SYNC1		Connected to +5V.
VTR SYNC		
PB CTL		
DPG		
AF BUSY	I	AF busy signal.
		Not used.
IRIS PWM	O	Iris control signal. 25.5 μsec period PWM signal.
		Not used.
CAM SI	I	Serial data input.
CAM SO	O	Serial data output.
$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
AJST	I	Adjustment timing pulse input. Normally "H".
PI/TO		Not used.
PI/PWM		
PI/PO		
PI O		Connected to +5V.
PKO		
GND		GND
VDD		+5V power supply.
VPP		
		Not used.
$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC706 on VC-112P board).
$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC702 on VC-112P board).
CS ROM	O	Chip select signal to EEPROM (IC712 on VC-112P board).
$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC705 on VC-112P board).
$\overline{\text{NTSC}}$	O	NTSC: "L", PAL: "H".
$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC707 on VC-112P board).
$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-112P board).
		Not used.
$\overline{\text{CS A/D}}$	O	Chip select signal to Zoom position A/D converter (IC855 on VC-112P board).
		Not used.

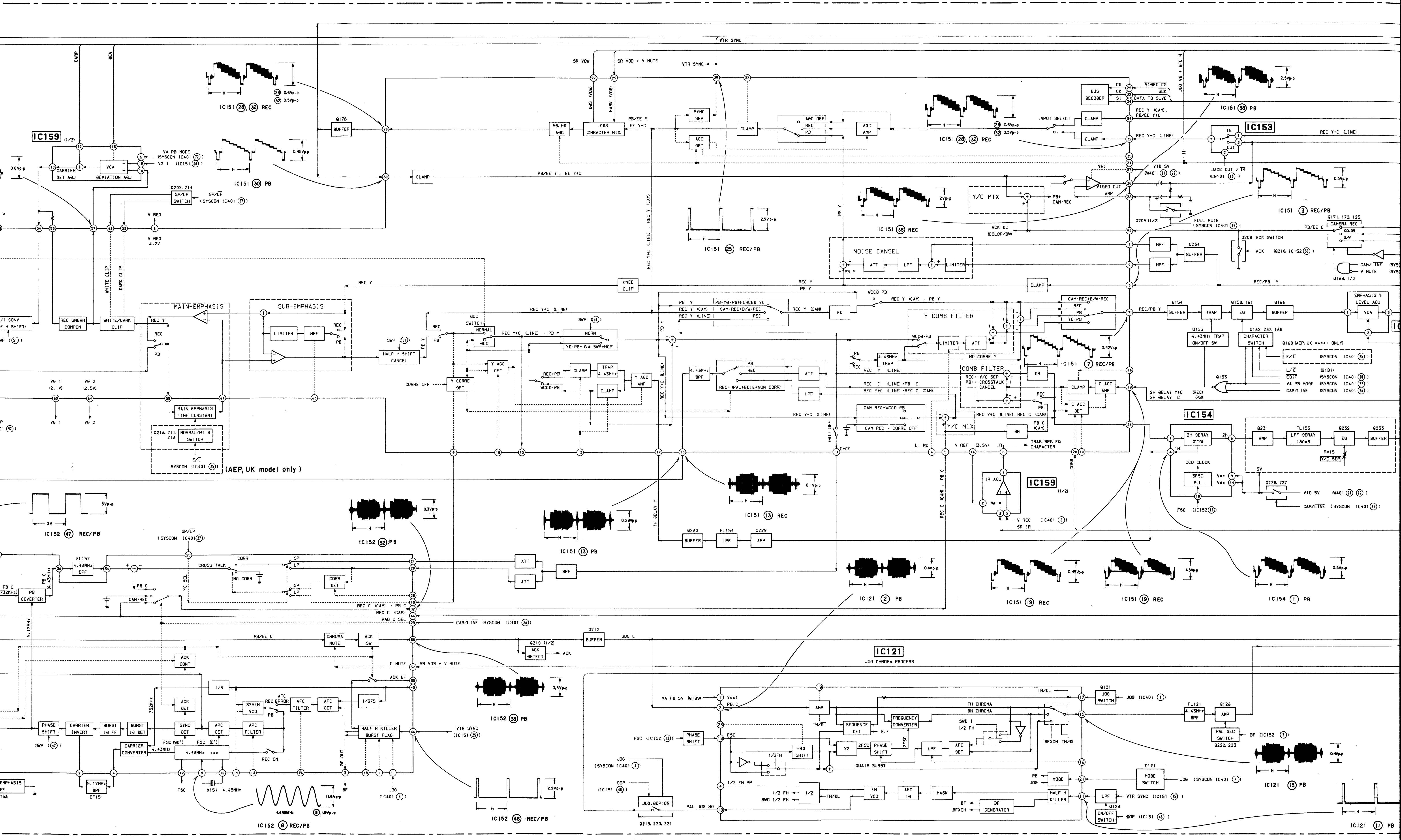
3-5. CAMERA (2) BLOCK DIAGRAM

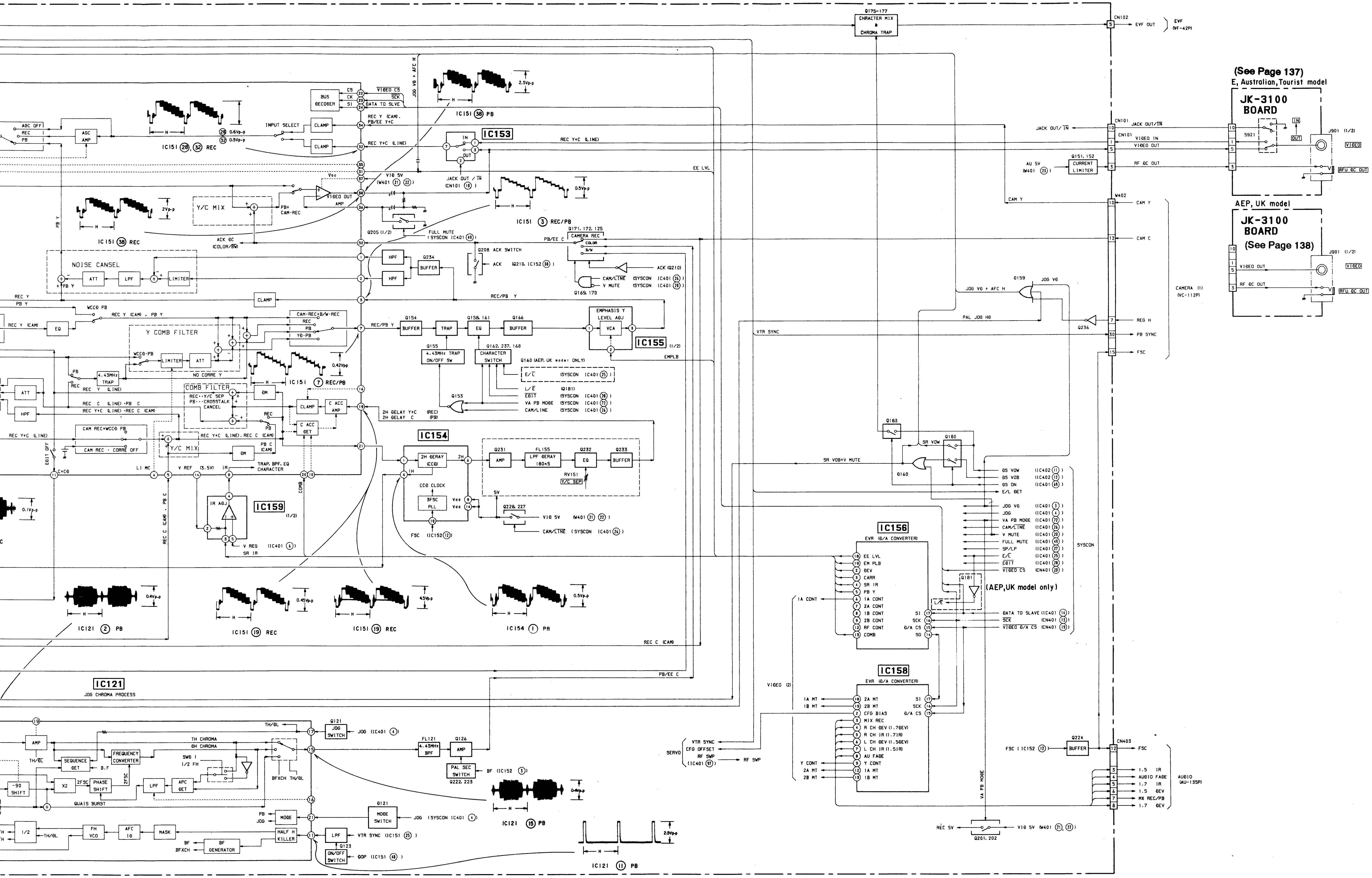

VC-112P BOARD
(See Page 105)
IC852 (1/4)
IRIS PWM (IC709 ⑦⑤)
LPF
IC851 (1/2)
HALL AMP
REF 2V (IC702 ⑫)
HALL OUT (IC709 ⑥①)
HALL OFS (IC702 ⑧)
HALL GAIN (IC702 ⑦)
IC854
ZOOM MOTOR DRIVE
ZOOM FWD (IC709 ②)
ZOOM REV (IC709 ①)
IN 1
IN 2
OUT 1
OUT 2
Vcc
Vss
V CONT
CAMERA (1)
ZOOM SPD (IC702 ⑥)
D5V (W402 ㊴㊳)
IC855
A/D CONVERTER
DVDD
SCK
A/D SCK
CS A/D
A/D SO
CL (14MHz) (IC801 ㊲)
CAM SCK (IC709 ⑦⑨)
CS A/D (IC709 ⑨⑧)
CAM SI (IC709 ⑦⑦)
FOC IN 4 (IC706 ⑮)
FOC IN 2 (IC706 ⑬)
FOC IN 3 (IC706 ⑭)
FOC IN 1 (IC706 ⑫)
FOC END FAR (IC709 ㉘)
FOC END LED (IC709 ⑥)
FOC END FAR 2 (IC709 ㉗)
09


VC-112P BOARD
(See Page 105)
IC852 (1/4)
IC851 (1/2)
IRIS DRIVE
LPF
IRIS PWM (IC709 (75))
CN851
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
LENS UNIT
M904
IRIS METER
M
IC852 (1/4)
HALL BIAS CONTROL
IC851 (1/2)
HALL AMP
REF 2V (IC702 (12))
BIAS (+)
HALL OUT (IC709 (61))
HALL (+)
H
HALL (-)
HALL OFS (IC702 (8))
IC852 (1/4)
HALL GAIN CONTROL
BIAS (+)
Q851
HALL GAIN (IC702 (7))
IC854
ZOOM MOTOR DRIVE
M906
ZOOM MOTOR
ZOOM FWD (IC709 (2))
ZOOM REV (IC709 (1))
IN 1
IN 2
OUT 1
OUT 2
ZOOM W
ZOOM T
MT 5V (W402 (1)(2))
Vcc
CAMERA (1)
Q853
DRIVE CURRENT LIMITER
ZOOM SPD (IC702 (6))
V CONT
Vss
ZOOM POSITION
D5V (W402 (39)(38))
ZP REF
IC855
A/D CONVERTER
ZOOM ENC
GND
DVDD
A VDD
CL (14MHz) (IC801 (57))
CAM SCK (IC709 (79))
CS A/D (IC709 (98))
CAM SI (IC709 (77))
SCK
A/D SCK
CS A/D
A/D SO
AD IN
IC853
FOCUS MOTOR DRIVE
M905
FOCUS MOTOR
FOC IN 4 (IC706 (15))
FOC IN 2 (IC706 (13))
FOC IN 3 (IC706 (14))
FOC IN 1 (IC706 (12))
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
FOCUS MA
FOCUS MB
FOCUS M̄B̄
FOCUS M̄Ā
Vcc
FOCUS END SENSOR
SENS Vcc
MT 5V (W402 (1)(2))
FOC END FAR (IC709 (28))
EDGE SENS
Q852
LED DRIVE
FOC END LED (IC709 (6))
LED
FOC END FAR 2 (IC709 (27))
ZONE SENS

3-6. VIDEO (1) BLOCK DIAGRAM

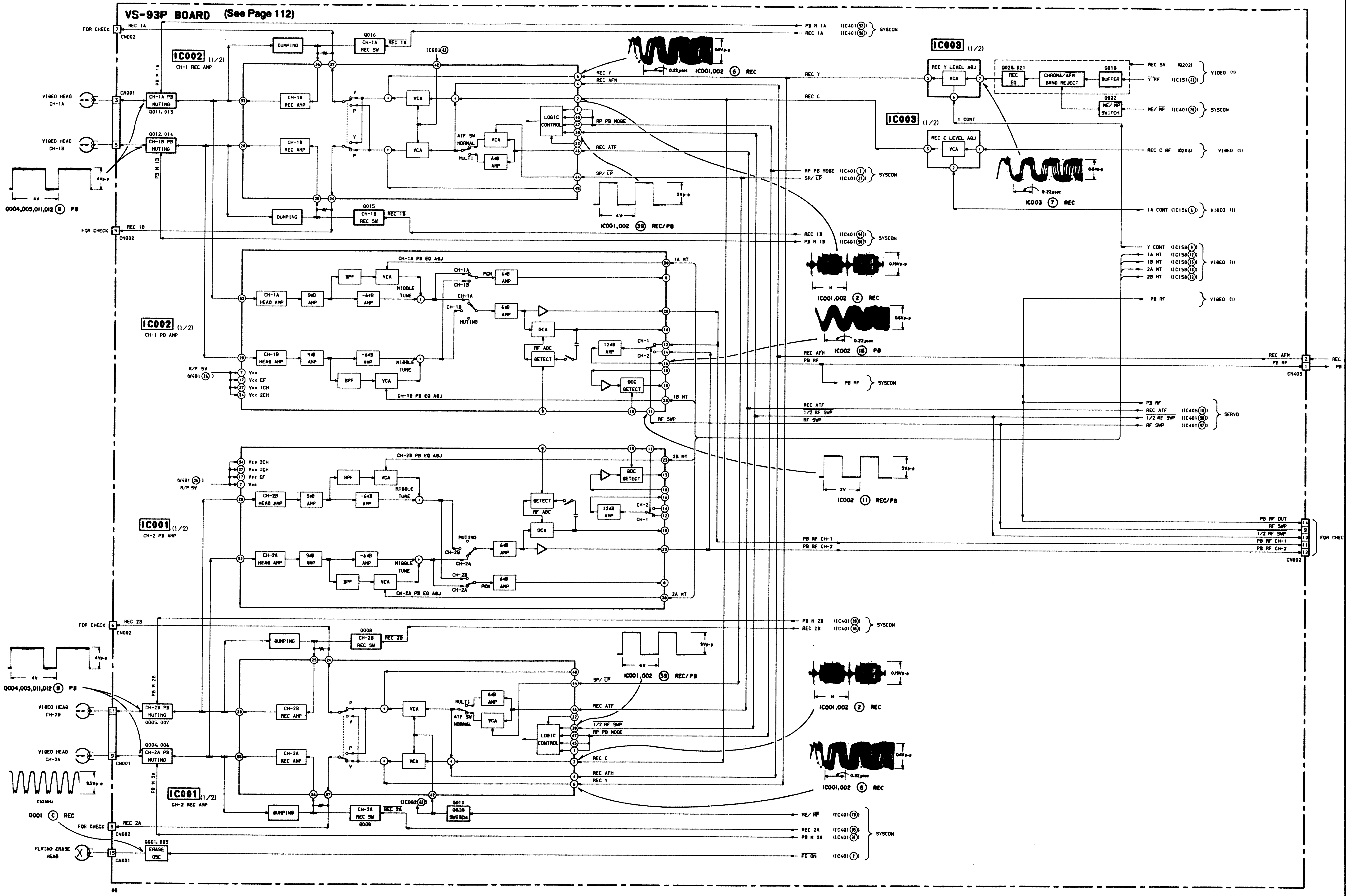

VS-93P BOARD
(See Page 115, 123)
(AEP, UK model only)
IC005
E/L DETECT
MAIN COUNTER
INTEG COUNTER
GATE GEN. COUNTER
PB 5V (Q199)
VTR SYNC (IC151 (35))
FSC (IC152 (12))
DDP (IC151 (48))
Q225 BUFFER
Q031
L/E (Q181)
Q027 HI:ON
Q028
Q029
LPF& TRAP
LPF
Q024, Q001 SOFT LIMITER
Q026, 025, 023 LPF
Q030 ON/OFF SWITCH
DDP (IC151 (48))
DD P (IC151 (48))
E/L DET
PB Y
Q189 BUFFER
Y RF (REC Y RF)
VIDEO (2)
PB RF (IC002 (16))
REC C RF
Q182 BUFFER
AFM/ATF TRAP
Q184 BUFFER
CHROMA TRAP
Q185 TUNING AMP
Q188 TUNING FREQUENCY SWITCH
PB 5V (Q199)
Q181 L/E (SYSCON IC401 (25)) E/L
Q235 ATT. SWITCH
L/E (Q181)
V MUTE (SYSCON IC401 (28))
Q205 (1/2) DOC DET LEVEL SWITCH
Q191 EQ
Q192,194 PEAKING AMP
Q195 BUFFER
VCA
PB Y LEVEL ADJ
IC155 (1/2)
PB 5V
Q199 PB 5V VA PB 5V
(M401 (21) (22)) VIO 5V
Q200
(SYSCON IC401 (72)) VA PB MODE
IC151 (43) REC
IC151 (43) PB
IC151 (45) PB
IC151 (47) (50) PB
(47) 0.4Vp-p
(50) 0.5Vp-p
0.7Vp-p
0.5Vp-p
0.3Vp-p
0.22μsec
IC151
Y PROCESS
DEM IN (PB Y RF)
LIMITER
FM DEMOD
LPF
DOC DET
REC Y RF
PB Y RF
RF AGC
LIMITER
FM MODULATOR
V/I CONV (HALF H SHIFT)
SWP ((51))
CLIP COMPEN
Vcc RF Vcc
VIO 5V (M401 (21) (22))
RF SWP (SERVO IC401 (97))
VG 1 (2.1V)
VG 2 (2.5V)
DOC P
V REG 4.2V
IC151 (57) REC
0.8Vp-p
IC159 (1/2)
CARR
DEV
CARRIER SET ADJ
VCA DEVIATION ADJ
VA PB MODE (SYSCON IC401 (72))
VG 1 (IC151 (60))
Q207, 214 SP/LP SWITCH
SP/LP (SYSCON IC401 (77))
REC SMEAR COMPEN
WHITE/DARK CLIP
WHITE CLIP
DARK CLIP
MAIN-EMPHASIS
REC Y
MAIN EMPHASIS TIME CONSTANT
Q216, 211, 213 NORMAL/HI 8 SWITCH
E/L SYSCON (IC401 (25))
(AEP, UK model only)
SUB-EMPHASIS
LIMITER
HPF
IC151 (28), (32) REC
(28) 0.6Vp-p
(32) 0.5Vp-p
IC151 (30) PB
0.45Vp-p
Q178 BUFFER
CLAMP
PB/EE Y, EE Y+C
SR VDW
VG HD ADD
CHROMA
REC Y
REC Y+C (LINE)
DOC SWITCH
NORMAL
DOC
REC Y+C (LINE) · PB Y
SWP ((51))
HALF H SHIFT CANCEL
CORRE OFF
Y CORRE DET
Y AGC DET
REC+PB
VCCO·PB
CLAMP
YO·PB+ (VA SW)
NORM
IC152 (42) PB
40mVp-p
IC152 (40) REC
0.5Vpp
IC152
CHROMA PROCESS
PB C, REC C (LINE)
(SYSCON IC401 (72)) VA PB MODE
(SERVO IC401 (97)) RF SWP
V REG (4.2V)
ACCO
REC C (LINE) REC
TRANS
PB
ACC AMP
ACC CONT
ACC CHANNEL HOLD
ACC DET
EE C
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
REC C (732KHz)
REC CONVERTER
REC C (4.43MHz)
SECAM
BURST EMPHASIS
CHROMA EMPHASIS
ACK SW
ACK SEC
5.17MHz
I REF
(M401 (21) (22)) VIO 5V
Vcc1
Vcc2
CHROMA EMPHASIS BPF FL153
5.17MHz BPF CF151
PB C RF
LPF
Q204 AMP
Q203 BUFFER
REC C BPF AFM TRAP
PB C (732KHz)
PB COVERTER
PB C (4.43MHz)
FL152 4.43MHz BPF
IC152 (47) REC/PB
5Vp-p
2V
SP/LP (SYSCON IC401 (77))
YC SEL
CROSS TALK
CORR
NO CORR
CORR DET
SP LP
PB C
CAM·REC
REC C (CAM) · PB C
REC C (CAM)
PAD C SEL
CAM/LINE (SYSCON IC401 (26))
PB/EE C
CHROMA MUTE
ACK SW
ACK CONT
ACK DET
C MUTE
SR VDB + V MUTE
ACK BF
1/8
375fH VCO
AFC ERROR
AFC FILTER
AFC DET
1/375
PHASE SHIFT
CARRIER INVERT
BURST 1D FF
BURST 1D DET
SYNC DET
APC DET
APC FILTER
HALF H KILLER BURST FLAG
CARRIER CONVERTER
4.43MHz VXO
FSC (90°)
FSC (0°)
REC ON
732KHz
BF OUT
X151 4.43MHz
FSC
BF
JOG (IC401 (4))
VTR SYNC (IC151 (35))
IC152 (32) PB
0.3Vp-p
IC151 (13) PB
ATT
BPF
Q210 (1/2) ACK DETECT
ACK
BUFFER
IC152 (38) PB
0.3Vp-p
IC152 (8) REC/PB
4.43MHz
(8) 1.6Vp-p
IC152 (46) REC/PB
2.5Vp-p
H


IC159 (1/2)
CARRIER SET ADJ
DEVIATION ADJ
VCA
VA PB MODE (SYSCON IC401 (72))
VG 1 (IC151 (40))
SP/LP SWITCH
Q207, 214
SP/LP (SYSCON IC401 (27))
V REG 4.2V
WHITE CLIP
DARK CLIP
REC SMEAR COMPEN
WHITE/DARK CLIP
MAIN-EMPHASIS
MAIN EMPHASIS TIME CONSTANT
NORMAL/HI 8 SWITCH
Q214, 211, 213
E/L̄ SYSCON (IC401 (25))
(AEP, UK model only)
SUB-EMPHASIS
LIMITER
HPF
HALF H SHIFT CANCEL
Y CORRE DET
Y AGC DET
DOC SWITCH
NORMAL
DOC
CORRE OFF
CLAMP
TRAP 4.43MHz
Y AGC AMP
KNEE CLIP
Q178 BUFFER
VD HD ADD
DDS (CHRACTER MIX)
CLAMP
SYNC SEP
AGC DET
AGC AMP
VTR SYNC
SR VDW
SR VDB + V MUTE
PB/EE Y, EE Y+C
IC151 (28), (32) REC
IC151 (30) PB
IC151 (25) REC/PB
IC151 (38) REC
IC151 (38) PB
IC151 (3) REC/PB
IC151 (7) REC/PB
IC151 (13) REC
IC151 (13) PB
IC151 (19) REC
IC151 (19) REC
IC154 (1) PB
IC121 (2) PB
IC121 (15) PB
IC121 (11) PB
IC152 (47) REC/PB
IC152 (32) PB
IC152 (38) PB
IC152 (8) REC/PB
IC152 (46) REC/PB
BUS DECODER
INPUT SELECT
IC153
VIDEO OUT AMP
Y/C MIX
JACK OUT / IN (CN101 (18))
FULL MUTE (SYSCON IC401 (49))
Q205 (1/2)
Q208 ACK SWITCH
ACK (IC210, IC152 (38))
Q171, 172, 125 CAMERA REC
NOISE CANSEL
ATT
LPF
LIMITER
HPF
Q234 BUFFER
Y COMB FILTER
COMB FILTER
REC···Y/C SEP PB···CROSSTALK CANCEL
4.43MHz TRAP
4.43MHz BPF
DM
CLAMP
C ACC AMP
C ACC DET
Q154 BUFFER
TRAP
Q158, 161 EQ
Q166 BUFFER
EMPHASIS Y LEVEL ADJ
VCA
Q155 4.43MHz TRAP ON/OFF SW
Q162, 237, 168 CHARACTER SWITCH
Q160 (AEP, UK model ONLY)
IC154
2H DELAY (CCD)
CCD CLOCK
3FSC PLL
Q231 AMP
FL155 LPF DELAY 180nS
Q232 EQ
Q233 BUFFER
RV151 Y/C SEP
Q228, 227
IC159 (1/2)
IR ADJ
Q230 BUFFER
FL154 LPF
Q229 AMP
FL152 4.43MHz BPF
PB CONVERTER
CROSS TALK
NO CORR
CORR DET
ATT
BPF
CHROMA MUTE
ACK SW
ACK CONT
ACK DET
Q212 BUFFER
Q210 (1/2) ACK DETECT
PHASE SHIFT
CARRIER INVERT
BURST 1D FF
BURST 1D DET
SYNC DET
APC DET
APC FILTER
375fH VCO
AFC FILTER
AFC DET
1/375
1/8
HALF H KILLER BURST FLAG
CARRIER CONVERTER
4.43MHz VXO
5.17MHz BPF CF151
X151 4.43MHz
IC121
JOG CHROMA PROCESS
AMP
SEQUENCE DET
FREQUENCY CONVERTER
-90 SHIFT
X2
PHASE SHIFT
LPF
APC DET
FH VCO
AFC 1D
MASK
BF GENERATOR
HALF H KILLER
MODE
Q121 JOG SWITCH
FL121 4.43MHz BPF
Q126 AMP
PAL SEC SWITCH Q222, 223
Q121 MODE SWITCH
LPF
Q123 ON/OFF SWITCH
JOG, DOP:ON Q215, 220, 221

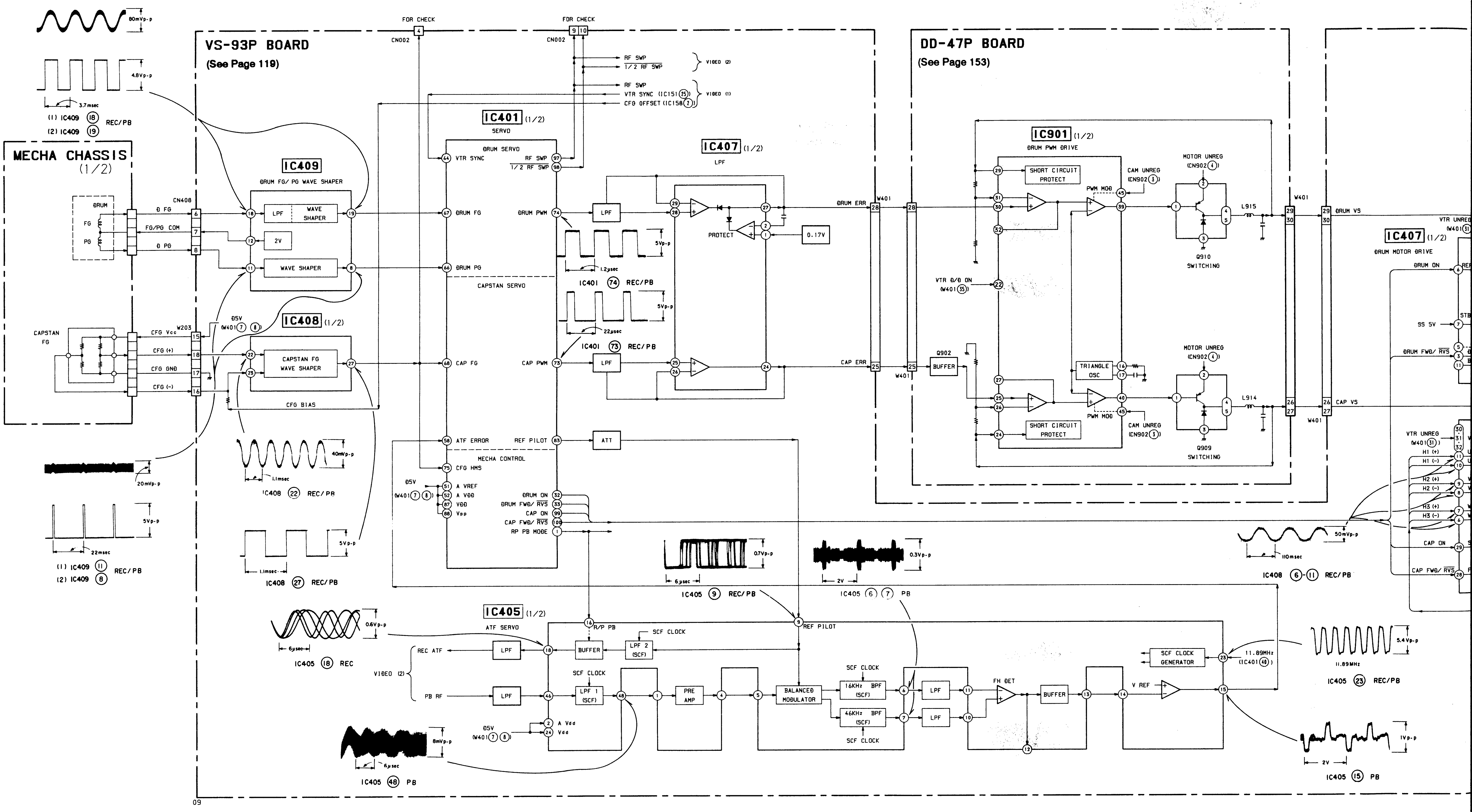


IC121
JOG CHROMA PROCESS
IC151 (28), (32) REC
IC151 (38) REC
IC151 (38) PB
IC151 (3) REC/PB
IC151 (7) REC/PB
IC151 (19) REC
IC154 (1) PB
IC121 (2) PB
IC121 (15) PB
IC121 (11) PB
IC153
IC154
IC155
IC156
IC158
IC159
BUS DECODER
VIDEO CS
SCK
DATA TO SLVE
INPUT SELECT
CLAMP
AGC AMP
AGC OFF
REC
PB
Y/C MIX
PB+ CAM-REC
VIDEO OUT AMP
NOISE CANSEL
ATT
LPF
LIMITER
Y COMB FILTER
WCCO-PB
NO CORRE Y
4.43MHz TRAP
COMB FILTER
REC··Y/C SEP
PB···CROSSTALK CANCEL
C ACC AMP
C ACC DET
2H DELAY Y+C
2H DELAY C
2H DELAY (CCD)
CCD CLOCK
3FSC PLL
FL155
LPF DELAY 180nS
RV151 Y/C SEP
Q154 BUFFER
TRAP
Q158, 161 EQ
Q166 BUFFER
EMPHASIS Y LEVEL ADJ
VCA
Q155 4.43MHz TRAP ON/OFF SW
Q162, 237, 168 CHARACTER SWITCH
Q160 (AEP, UK model ONLY)
Q153
Q208 ACK SWITCH
Q234 BUFFER
HPF
Q171, 172, 125 CAMERA REC
COLOR
B/W
Q169, 170
Q175-177 CHRACTER MIX & CHROMA TRAP
CN102 EVF OUT
EVF (VF-42P)
(See Page 137)
E, Australian, Tourist model
JK-3100 BOARD
AEP, UK model
JK-3100 BOARD
(See Page 138)
J901 (1/2)
VIDEO
RF DC OUT
S921
IN
OUT
CN101
JACK OUT/IN
VIDEO IN
VIDEO OUT
RF DC OUT
Q151, 152 CURRENT LIMITER
AU 5V (W401 (22))
W402
CAM Y
CAM C
REG H
PB SYNC
FSC
CAMERA (1) (VC-112P)
Q159
JOG VD
JOG VD + AFC H
PAL JOG HD
Q236
VTR SYNC
Q183
Q180
SR VDW
Q160
SR VDB+V MUTE
DS VDW
DS VDB
DS ON
E/L DET
JOG VD
JOG
VA PB MODE
CAM/LINE
V MUTE
FULL MUTE
SP/LP
E/L
EDIT
VIDEO CS
SYSCON
EVR (D/A CONVERTER)
EE LVL
EM PLB
DEV
CARR
SR IR
PB Y
1A CONT
2A CONT
1B CONT
2B CONT
RF CONT
COMB
SI
SCK
D/A CS
SO
Q181
(AEP,UK model only)
DATA TO SLAVE (IC401 (14))
SCK (CN401 (13))
VIDEO D/A CS (CN401 (15))
2A MT
2B MT
CFG BIAS
MIX REC
R CH DEV (1.70EV)
R CH IR (1.7IR)
L CH DEV (1.50EV)
L CH IR (1.5IR)
AU FADE
Y CONT
1A MT
1B MT
VIDEO (2)
SERVO
VTR SYNC
CFG OFFSET
RF SWP
Q224 BUFFER
CN403
FSC (IC152 (12))
1.5 IR
AUDIO FADE
1.7 IR
1.5 DEV
MX REC/PB
1.7 DEV
AUDIO (AU-135P)
REC 5V
Q201, 202
VID 5V (W401 (21), (22))
Q121 JOG SWITCH
JOG (IC401 (4))
FL121 4.43MHz BPF
Q126 AMP
PAL SEC SWITCH
Q222, 223
BF (IC152 (3))
Q121 MODE SWITCH
JOG (SYSCON IC401 (4))
LPF
VTR SYNC (IC151 (25))
Q123 ON/OFF SWITCH
DOP (IC151 (48))
TH/DL
TH CHROMA
DH CHROMA
SEQUENCE DET
FREQUENCY CONVERTER
SWD 1
1/2 FH
X2
2FSC
PHASE SHIFT
APC DET
-90 SHIFT
QUAIS BURST
BFXCH
1/2
FH VCO
AFC ID
MASK
HALF H KILLER
BF GENERATOR
MODE
2.5Vp-p
0.5Vp-p
0.6Vp-p
2Vp-p
0.42Vp-p
0.45Vp-p
4.5Vp-p
0.4Vp-p
0.1Vp-p
H

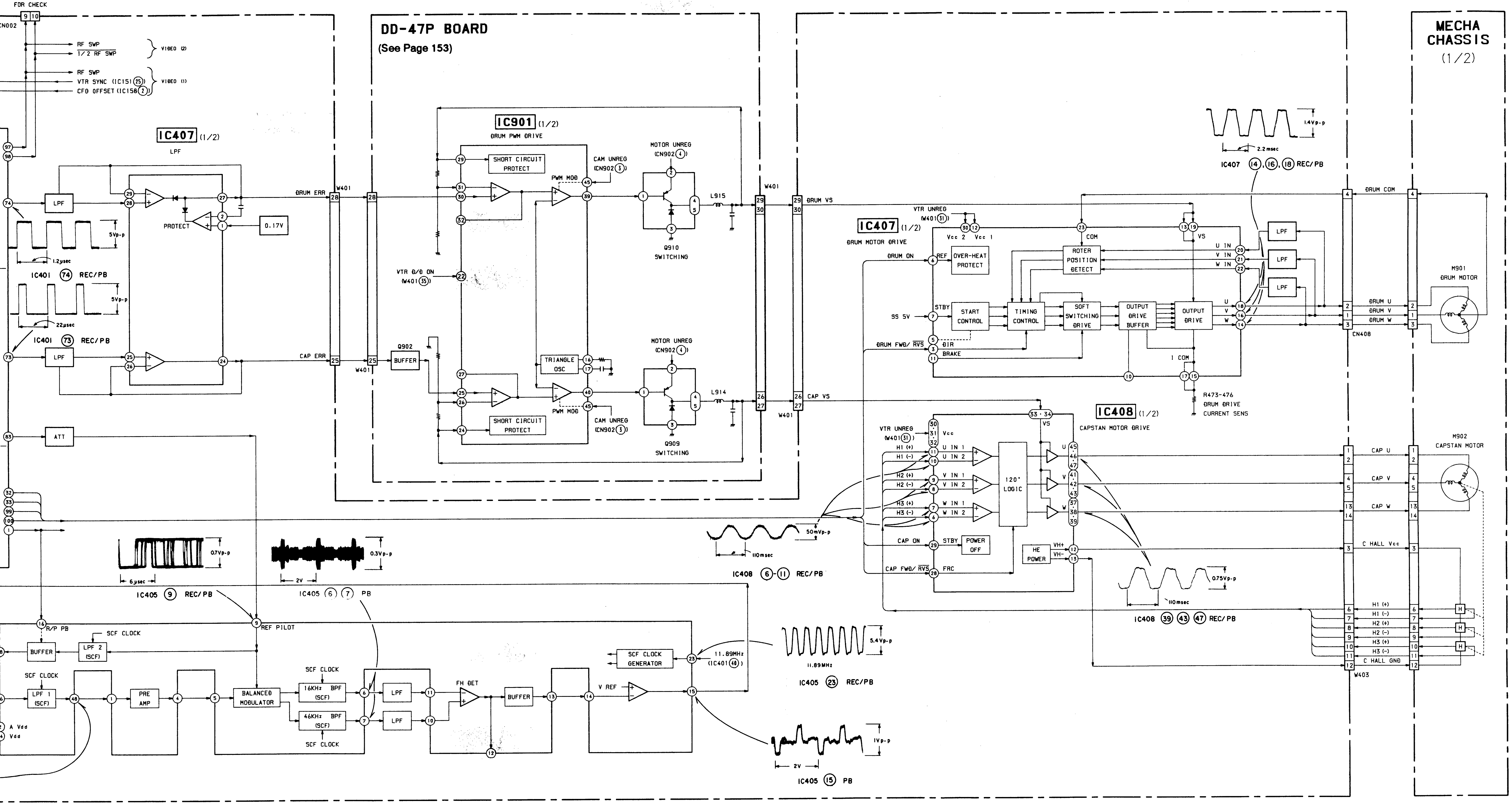
3-7. VIDEO (2) BLOCK DIAGRAM


VS-93P BOARD (See Page 112)
IC002 (1/2) CH-1 REC AMP
IC002 (1/2) CH-1 PB AMP
IC001 (1/2) CH-2 PB AMP
IC001 (1/2) CH-2 REC AMP
IC003 (1/2)
REC Y LEVEL ADJ
REC C LEVEL ADJ
Q020, 021 REC EQ
CHROMA/AFM BAND REJECT
Q019 BUFFER
Q022 ME/MP SWITCH
VIDEO HEAD CH-1A
VIDEO HEAD CH-1B
VIDEO HEAD CH-2B
VIDEO HEAD CH-2A
FLYING ERASE HEAD
FOR CHECK
CN001
CN002
CN403
CH-1A PB MUTING
Q011, 013
Q012, 014
CH-1B PB MUTING
CH-2B PB MUTING
Q005, 007
Q004, 006
CH-2A PB MUTING
Q001, 003 ERASE OSC
DUMPING
Q016 CH-1A REC SW
Q015 CH-1B REC SW
Q008 CH-2B REC SW
Q009 CH-2A REC SW
Q010 GAIN SWITCH
CH-1A REC AMP
CH-1B REC AMP
CH-2B REC AMP
CH-2A REC AMP
VCA
LOGIC CONTROL
ATF SW NORMAL
MULTI
6dB AMP
CH-1A HEAD AMP
CH-1B HEAD AMP
CH-2B HEAD AMP
CH-2A HEAD AMP
9dB AMP
-6dB AMP
BPF
MIDDLE TUNE
CH-1A PB EQ ADJ
CH-1B PB EQ ADJ
CH-2B PB EQ ADJ
CH-2A PB EQ ADJ
PCM
MUTING
DCA
RF AGC
DETECT
12dB AMP
DOC DETECT
Vcc 2CH
Vcc 1CH
Vcc EF
Vcc
R/P 5V
IC401 (26)
REC 1A
REC 1B
REC 2A
REC 2B
PB M 1A
PB M 1B
PB M 2A
PB M 2B
REC Y
REC AFM
REC C
REC ATF
RP PB MODE
SP/LP
1/2 RF SWP
RF SWP
1A MT
1B MT
2A MT
2B MT
PB RF
PB RF CH-1
PB RF CH-2
PB RF OUT
ME/MP
FE ON
Y CONT
1A CONT
REC 5V
Y RF
REC C RF
SYSCON
VIDEO (1)
SERVO
(IC401 (92)) PB M 1A
(IC401 (96)) REC 1A
(Q202) REC 5V
(IC151 (43)) Y RF
(IC401 (78)) ME/MP
(Q203) REC C RF
(IC401 (1)) RP PB MODE
(IC401 (27)) SP/LP
(IC156 (6)) 1A CONT
(IC401 (94)) REC 1B
(IC401 (90)) PB M 1B
(IC158 (5)) Y CONT
(IC158 (12)) 1A MT
(IC158 (13)) 1B MT
(IC158 (10)) 2A MT
(IC158 (11)) 2B MT
(IC405 (18)) PB RF
(IC401 (98)) REC ATF
(IC401 (98)) 1/2 RF SWP
(IC401 (97)) RF SWP
(IC401 (89)) PB M 2B
(IC401 (93)) REC 2B
(IC401 (78)) ME/MP
(IC401 (95)) REC 2A
(IC401 (91)) PB M 2A
(IC401 (2)) FE ON
Q004,005,011,012 (B) PB
4Vp-p
4V
IC001,002 (6) REC
0.6Vp-p
0.22μsec
IC003 (7) REC
0.5Vp-p
IC001,002 (39) REC/PB
5Vp-p
IC001,002 (2) REC
0.15Vp-p
H
IC002 (16) PB
IC002 (11) REC/PB
2V
Q001 (C) REC
8.5Vp-p
7.53MHz
09

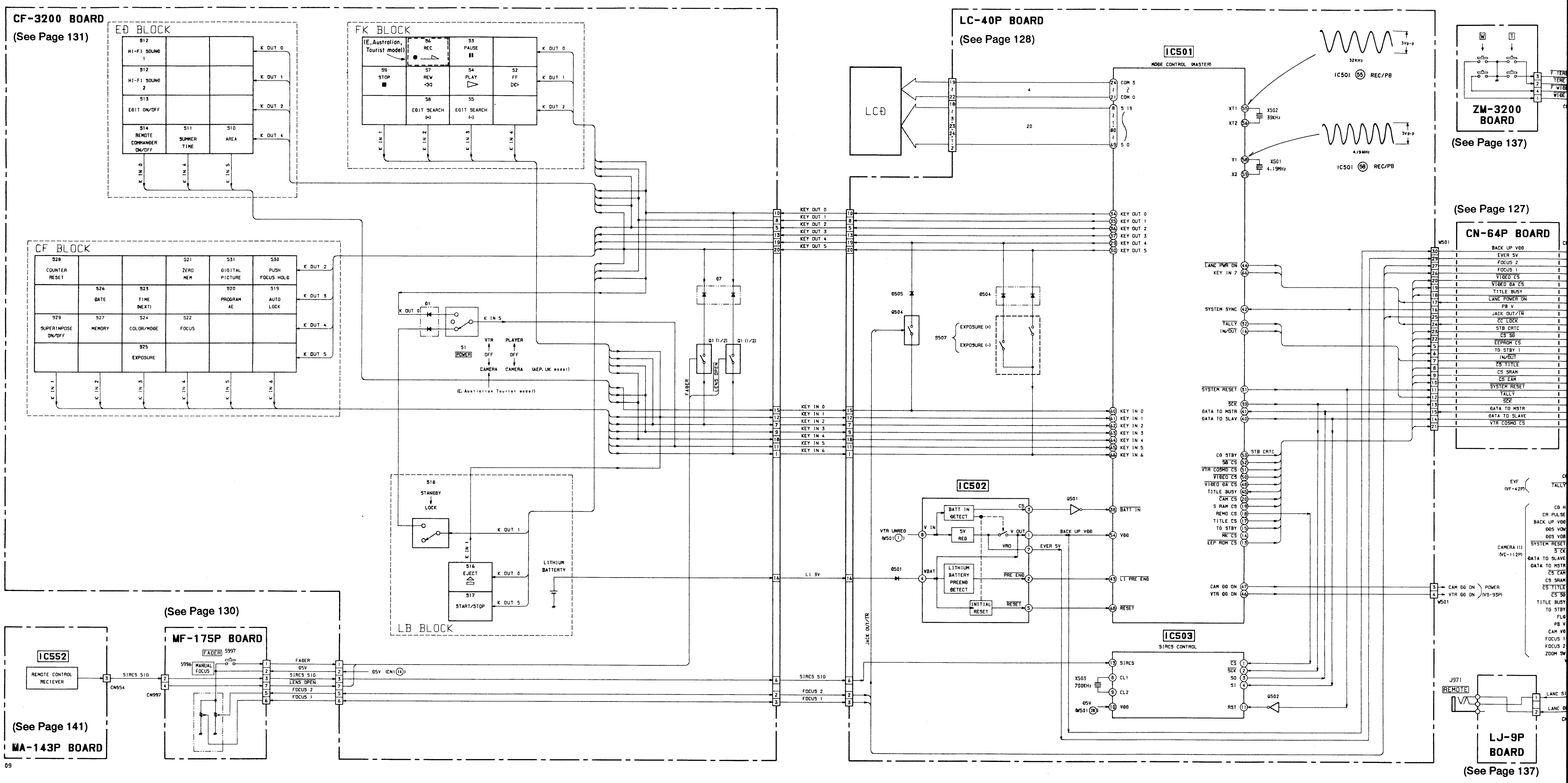
3-8. SERVO BLOCK DIAGRAM

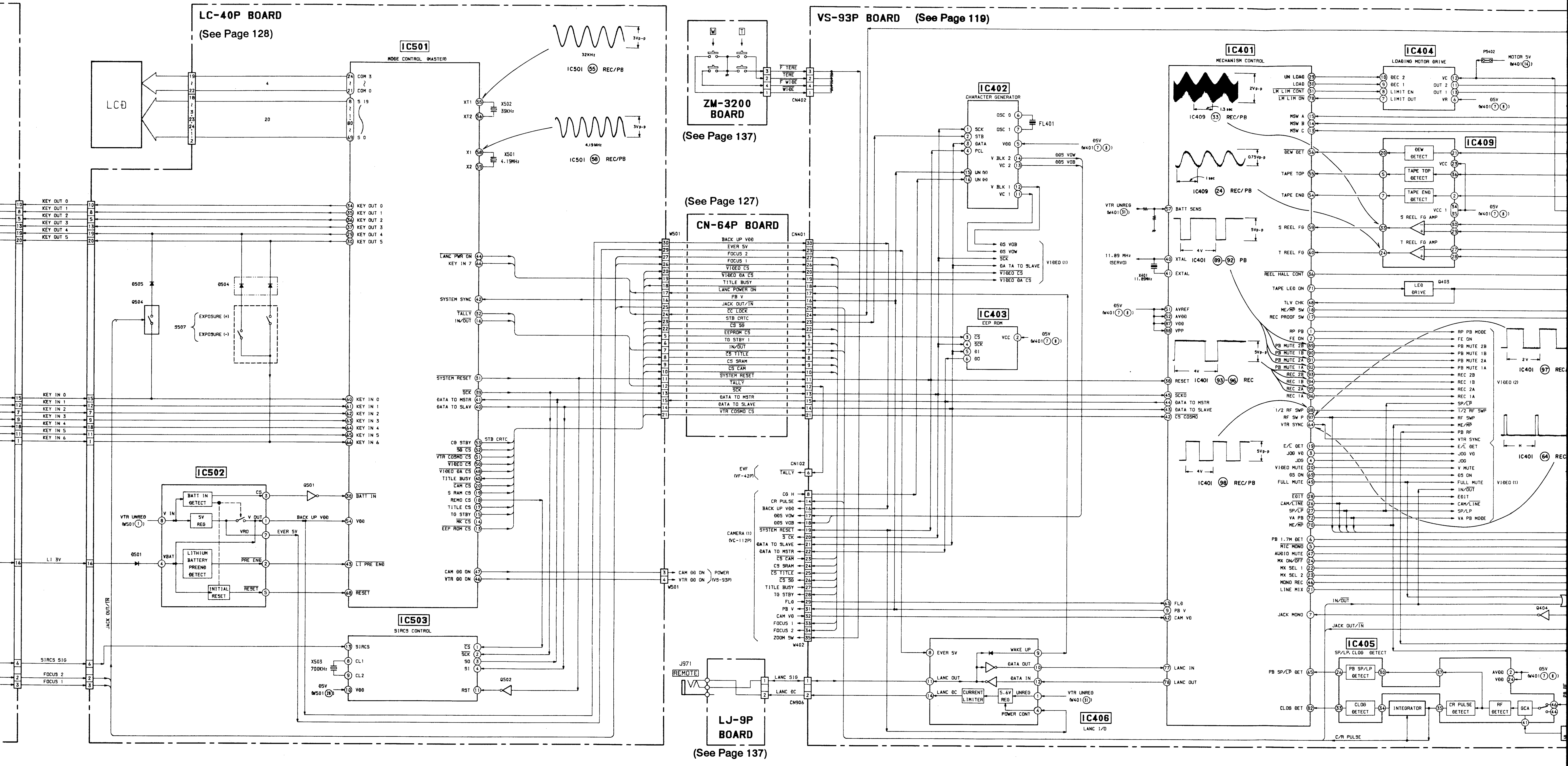


80mVp-p
4.8Vp-p
3.7msec
(1) IC409 ⑱ REC/PB
(2) IC409 ⑲
MECHA CHASSIS (1/2)
DRUM
FG
PG
CN408
D FG
FG/PG COM
D PG
CAPSTAN FG
W203
CFG Vcc
CFG (+)
CFG GND
CFG (−)
VS-93P BOARD
(See Page 119)
FOR CHECK
CN002
RF SWP
1/2 RF SWP
VIDEO (2)
VTR SYNC (IC151 ㉕)
CFG OFFSET (IC158 ②)
VIDEO (1)
IC409
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
2V
D5V (W401 ⑦ ⑧)
IC408 (1/2)
CAPSTAN FG WAVE SHAPER
CFG BIAS
IC401 (1/2)
SERVO
DRUM SERVO
VTR SYNC
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHA CONTROL
CFG HMS
A VREF
A VDD
VDD
Vpp
DRUM ON
DRUM FWD/RVS
CAP ON
CAP FWD/RVS
RP PB MODE
IC407 (1/2)
LPF
PROTECT
0.17V
5Vp-p
1.2μsec
IC401 ㊹ REC/PB
22μsec
IC401 ㊸ REC/PB
ATT
DRUM ERR
CAP ERR
40mVp-p
1.1msec
IC408 ㉒ REC/PB
20mVp-p
22msec
(1) IC409 ⑪ REC/PB
(2) IC409 ⑧
1.1msec
IC408 ㉗ REC/PB
0.7Vp-p
6μsec
IC405 ⑨ REC/PB
0.3Vp-p
2V
IC405 ⑥ ⑦ PB
IC405 (1/2)
ATF SERVO
R/P PB
REF PILOT
SCF CLOCK
BUFFER
LPF 2 (SCF)
REC ATF
VIDEO (2)
PB RF
LPF 1 (SCF)
A Vdd
Vdd
PRE AMP
BALANCED MODULATOR
16KHz BPF (SCF)
46KHz BPF (SCF)
FH DET
V REF
SCF CLOCK GENERATOR
11.89MHz (IC401 ㊽)
0.6Vp-p
6μsec
IC405 ⑱ REC
8mVp-p
6μsec
IC405 ㊽ PB
DD-47P BOARD
(See Page 153)
W401
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
PWM MOD
CAM UNREG (CN902 ③)
MOTOR UNREG (CN902 ④)
Q910 SWITCHING
L915
VTR D/D ON (W401 ㉟)
Q902 BUFFER
TRIANGLE OSC
Q909 SWITCHING
L914
DRUM VS
CAP VS
IC407 (1/2)
DRUM MOTOR DRIVE
VTR UNREG (W401 ㉛)
DRUM ON
SS 5V
DRUM FWD/RVS
VTR UNREG (W401 ㉛)
H1 (+)
H1 (−)
H2 (+)
H2 (−)
H3 (+)
H3 (−)
CAP ON
CAP FWD/RVS
50mVp-p
110msec
IC408 ⑥-⑪ REC/PB
5.4Vp-p
11.89MHz
IC405 ㉓ REC/PB
1Vp-p
2V
IC405 ⑮ PB
09

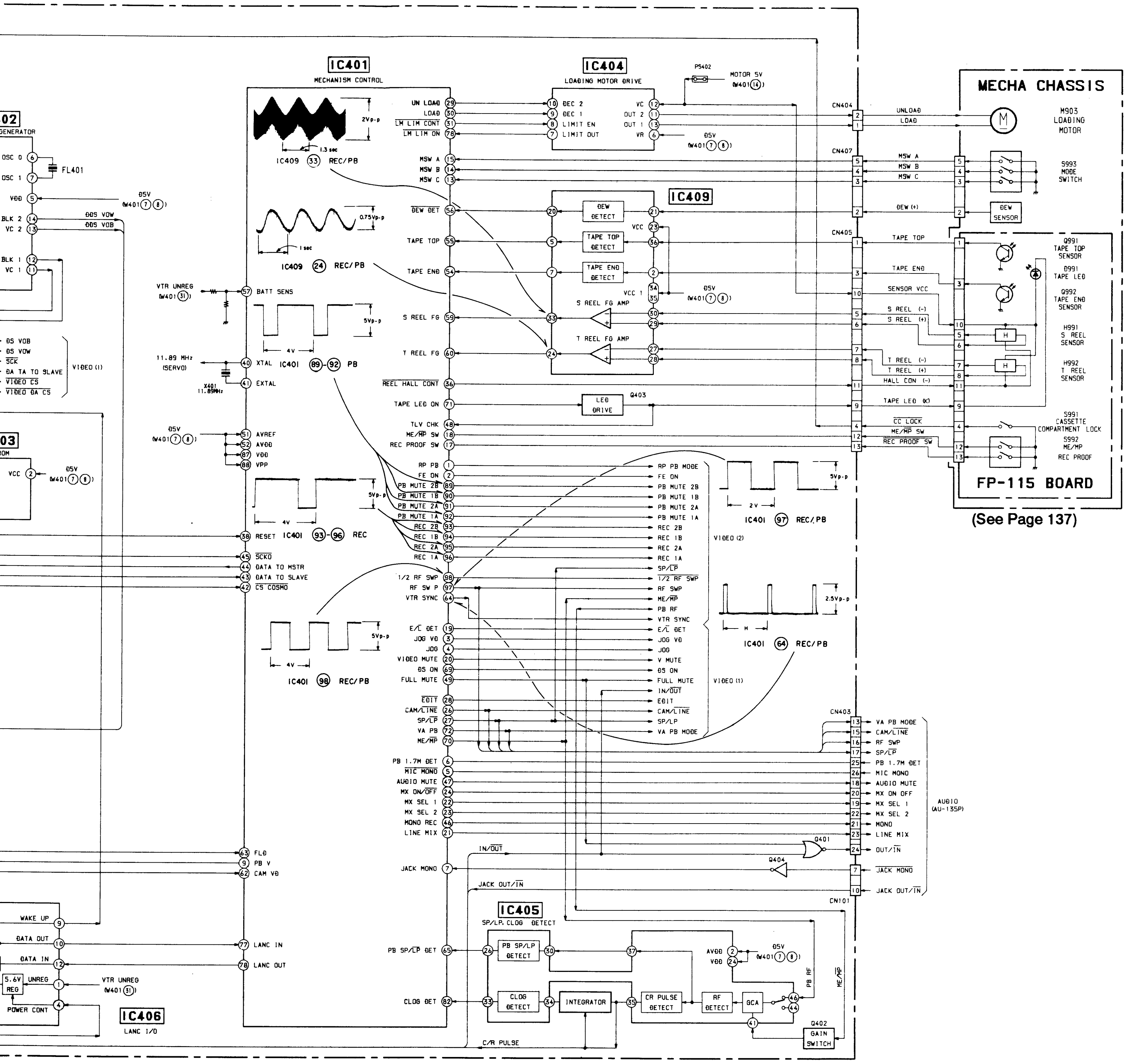

FOR CHECK
CN002
RF SWP
1/2 RF SWP
VIDEO (2)
VTR SYNC (IC151 ㉕)
CFO OFFSET (IC158 ②)
VIDEO (1)
IC407 (1/2)
LPF
PROTECT
0.17V
DRUM ERR
CAP ERR
5Vp-p
1.2μsec
IC401 ㉔ REC/PB
22μsec
IC401 ㉓ REC/PB
ATT
W401
DD-47P BOARD
(See Page 153)
IC901 (1/2)
DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
CAM UNREG (CN902 ③)
PWM MOD
MOTOR UNREG (CN902 ④)
L915
Q910 SWITCHING
VTR D/D ON (W401 ㉟)
Q902
BUFFER
TRIANGLE OSC
L914
Q909 SWITCHING
DRUM VS
CAP VS
1.4Vp-p
2.2msec
IC407 ⑭,⑯,⑱ REC/PB
IC407 (1/2)
DRUM MOTOR DRIVE
VTR UNREG (W401 ㉛)
Vcc 2
Vcc 1
DRUM ON
REF
OVER-HEAT PROTECT
ROTER POSITION DETECT
COM
VS
U IN
V IN
W IN
STBY
SS 5V
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DRUM FWD/RVS
DIR
BRAKE
I COM
R473-476
DRUM DRIVE CURRENT SENS
LPF
DRUM COM
DRUM U
DRUM V
DRUM W
CN408
MECHA CHASSIS (1/2)
M901 DRUM MOTOR
IC408 (1/2)
CAPSTAN MOTOR DRIVE
VTR UNREG (W401 ㉛)
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
CAP ON
POWER OFF
HE POWER
VH+
VH-
CAP FWD/RVS
FRC
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND
W403
M902 CAPSTAN MOTOR
50mVp-p
110msec
IC408 ⑥-⑪ REC/PB
0.75Vp-p
110msec
IC408 ㊴ ㊸ ㊼ REC/PB
0.7Vp-p
6μsec
IC405 ⑨ REC/PB
0.3Vp-p
2V
IC405 ⑥ ⑦ PB
R/P PB
SCF CLOCK
BUFFER
LPF 2 (SCF)
LPF 1 (SCF)
A Vdd
Vdd
PRE AMP
BALANCED MODULATOR
REF PILOT
16KHz BPF (SCF)
46KHz BPF (SCF)
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.89MHz (IC401 ㊽)
5.4Vp-p
11.89MHz
IC405 ㉓ REC/PB
1Vp-p
2V
IC405 ⑮ PB

3-9. SYSTEM CONTROL BLOCK DIAGRAM


CF-3200 BOARD
(See Page 131)
ED BLOCK
FK BLOCK
CF BLOCK
LB BLOCK
S12 HI-FI SOUND 1
S12 HI-FI SOUND 2
S13 EDIT ON/OFF
S14 REMOTE COMMANDER ON/OFF
S11 SUMMER TIME
S10 AREA
(E, Australian, Tourist model)
S6 REC
S3 PAUSE
S9 STOP
S7 REW
S4 PLAY
S2 FF
S8 EDIT SEARCH (+)
S5 EDIT SEARCH (-)
S28 COUNTER RESET
S21 ZERO MEM
S31 DIGITAL PICTURE
S30 PUSH FOCUS HOLD
S26 DATE
S23 TIME (NEXT)
S20 PROGRAM AE
S19 AUTO LOCK
S29 SUPERIMPOSE ON/OFF
S27 MEMORY
S24 COLOR/MODE
S22 FOCUS
S25 EXPOSURE
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4
K OUT 5
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
D1
S1 POWER
VTR
PLAYER
OFF
CAMERA
CAMERA (AEP, UK model)
(E, Australian Tourist model)
D7
Q1 (1/2)
FADER
LENS OPEN
S18 STANDBY LOCK
S16 EJECT
S17 START/STOP
LITHIUM BATTERY
KEY OUT 0
KEY OUT 1
KEY OUT 2
KEY OUT 3
KEY OUT 4
KEY OUT 5
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
KEY IN 4
KEY IN 5
KEY IN 6
LI 3V
SIRCS SIG
FOCUS 2
FOCUS 1
(See Page 130)
MF-175P BOARD
FADER S997
S996 MANUAL FOCUS
FADER
D5V
SIRCS SIG
LENS OPEN
FOCUS 2
FOCUS 1
D5V (CN1 ⑯)
CN997
IC552
REMOTE CONTROL RECIEVER
SIRCS SIG
CN554
(See Page 141)
MA-143P BOARD
LC-40P BOARD
(See Page 128)
LCD
IC501
MODE CONTROL (MASTER)
COM 3
COM 0
S 19
S 0
XT1 ㊺
XT2
X502 39KHz
X1
X2
X501 4.19MHz
32KHz
3Vp-p
IC501 ㊺ REC/PB
4.19MHz
IC501 ㊽ REC/PB
KEY OUT 0
KEY OUT 1
KEY OUT 2
KEY OUT 3
KEY OUT 4
KEY OUT 5
LANC PWR ON
KEY IN 7
SYSTEM SYNC
TALLY
IN/OUT
SYSTEM RESET
SCK
DATA TO MSTR
DATA TO SLAV
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
KEY IN 4
KEY IN 5
KEY IN 6
D505
D504
Q504
S507
EXPOSURE (+)
EXPOSURE (-)
IC502
BATT IN DETECT
5V REG
LITHIUM BATTERY PREEND DETECT
INITIAL RESET
VTR UNREG
W501
V IN
VBAT
V OUT
VRD
EVER 5V
BACK UP VDD
PRE END
RESET
D501
Q501
BATT IN
VDD
LI PRE END
CS
CO STBY
SB CS
VTR COSMO CS
VIDEO CS
VIDEO DA CS
TITLE BUSY
CAM CS
S RAM CS
REMO CS
TITLE CS
TG STBY
MK CS
EEP ROM CS
STB CRTC
CAM DD ON
VTR DD ON
IC503
SIRCS CONTROL
SIRCS
X503 700KHz
CL1
CL2
D5V W501
CS
SCK
SO
SI
RST
Q502
JACK OUT/TR
(See Page 127)
CN-64P BOARD
W501
BACK UP VDD
EVER 5V
FOCUS 2
FOCUS 1
VIDEO CS
VIDEO DA CS
TITLE BUSY
LANC POWER ON
PB V
JACK OUT/IN
CC LOCK
STB CRTC
CS SG
EEPROM CS
TG STBY 1
IN/OUT
CS TITLE
CS SRAM
CS CAM
SYSTEM RESET
TALLY
SCK
DATA TO MSTR
DATA TO SLAVE
VTR COSMO CS
CAM DD ON
VTR DD ON
POWER (VS-93P)
EVF (VF-42P)
TALLY
CAMERA (1) (VC-112P)
CD H
CR PULSE
BACK UP VDD
DDS VDW
DDS VDB
SYSTEM RESET
S CK
DATA TO SLAVE
DATA TO MSTR
CS CAM
CS SRAM
CS TITLE
CS SB
TITLE BUSY
TG STBY
FLG
PB V
CAM VD
FOCUS 1
FOCUS 2
ZOOM SW
ZM-3200 BOARD
(See Page 137)
W
T
J971
REMOTE
LANC
LJ-9P BOARD
(See Page 137)
09



LC-40P BOARD
(See Page 128)
LCD
IC501
MODE CONTROL (MASTER)
IC501 (55) REC/PB
IC501 (58) REC/PB
X502 32KHz
X501 4.19MHz
KEY OUT 0
KEY OUT 1
KEY OUT 2
KEY OUT 3
KEY OUT 4
KEY OUT 5
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
KEY IN 4
KEY IN 5
KEY IN 6
LANC PWR ON
KEY IN 7
SYSTEM SYNC
TALLY
IN/OUT
SYSTEM RESET
SCK
DATA TO MSTR
DATA TO SLAV
S507
EXPOSURE (+)
EXPOSURE (-)
D504
D505
Q504
IC502
BATT IN DETECT
5V REG
LITHIUM BATTERY PREEND DETECT
INITIAL RESET
VTR UNREG
LI 3V
D501
Q501
BATT IN
VDD
LI PRE END
RESET
BACK UP VDD
EVER 5V
CAM DD ON
VTR DD ON
IC503
SIRCS CONTROL
SIRCS
X503 700KHz
Q502
SIRCS SIG
FOCUS 2
FOCUS 1
JACK OUT/IN
ZM-3200 BOARD
(See Page 137)
T TELE
TELE
T WIDE
WIDE
CN402
(See Page 127)
CN-64P BOARD
W501
CN401
BACK UP VDD
EVER 5V
FOCUS 2
FOCUS 1
VIDEO CS
VIDEO DA CS
TITLE BUSY
LANC POWER ON
PB V
JACK OUT/IN
CC LOCK
STB CRTC
CS SG
EEPROM CS
TG STBY 1
IN/OUT
CS TITLE
CS SRAM
CS CAM
SYSTEM RESET
TALLY
SCK
DATA TO MSTR
DATA TO SLAVE
VTR COSMO CS
POWER (VS-93P)
EVF (VF-42P)
CAMERA (1) (VC-112P)
CN102
CN906
LJ-9P BOARD
(See Page 137)
J971
REMOTE
LANC SIG
LANC DC
VS-93P BOARD
(See Page 119)
IC401
MECHANISM CONTROL
IC402
CHARACTER GENERATOR
IC403
EEP ROM
IC404
LOADING MOTOR DRIVE
IC405
SP/LP, CLOG DETECT
IC406
LANC I/O
IC409
IC409 (33) REC/PB
IC409 (24) REC/PB
IC401 (89)-(92) PB
IC401 (93)-(96) REC
IC401 (98) REC/PB
IC401 (97) REC
IC401 (64) REC
FL401
X401 11.89MHz
DEW DETECT
TAPE TOP DETECT
TAPE END DETECT
S REEL FG AMP
T REEL FG AMP
LED DRIVE
Q403
Q404
VIDEO (1)
VIDEO (2)
PB SP/LP DETECT
CLOG DETECT
INTEGRATOR
CR PULSE DETECT
RF DETECT
GCA
C/R PULSE
MOTOR 5V
WAKE UP
DATA OUT
DATA IN
CURRENT LIMITER
5.6V REG
POWER CONT


IC401
MECHANISM CONTROL
IC404
LOADING MOTOR DRIVE
IC409
IC405
SP/LP, CLOG DETECT
IC406
LANC I/O
MECHA CHASSIS
M903
LOADING MOTOR
S993
MODE SWITCH
DEW SENSOR
Q991 TAPE TOP SENSOR
D991 TAPE LED
Q992 TAPE END SENSOR
H991 S REEL SENSOR
H992 T REEL SENSOR
S991 CASSETTE COMPARTMENT LOCK
S992 ME/MP
REC PROOF
FP-115 BOARD
(See Page 137)
CN404
CN407
CN405
CN403
CN101
AUDIO (AU-135P)
IC409 (33) REC/PB
IC409 (24) REC/PB
IC401 (89)-(92) PB
IC401 (93)-(96) REC
IC401 (97) REC/PB
IC401 (64) REC/PB
IC401 (98) REC/PB
VIDEO (2)
VIDEO (1)
11.89 MHz (SERVO)
X401 11.89MHz
PB SP/LP DET
CLOG DET
PB SP/LP DETECT
CLOG DETECT
INTEGRATOR
CR PULSE DETECT
RF DETECT
GCA
Q402 GAIN SWITCH
C/R PULSE
LED DRIVE
Q403
Q401
Q404
DEW DETECT
TAPE TOP DETECT
TAPE END DETECT
S REEL FG AMP
T REEL FG AMP
FL401
WAKE UP
DATA OUT
DATA IN
POWER CONT
VTR UNREG

3-10. MECHANISM CONTROL MICROPROCESSOR PIN FUNCTION (IC401 ON VS-93P BOARD: CXP80624)

<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>RP PB MODE</td><td>O</td><td>REC/PB select signal of REC/PB amplifier (IC001 and IC002 on VS-93P board) and ATF servo IC (IC405 on VS-93P board). "H": PB.</td></tr>
<tr><td>2</td><td>FE ON</td><td>O</td><td>Flying erase oscillation ON/OFF control signal. "L": oscillation.</td></tr>
<tr><td>3</td><td>JOG VD</td><td>O</td><td>False VD signal to be inserted into playback video signal during variable speed playback.</td></tr>
<tr><td>4</td><td>JOG</td><td>O</td><td>Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.</td></tr>
<tr><td>5</td><td>MIC MONO</td><td>I</td><td>External microphone monaural/stereo discrimination input. "L" when monaural microphone used.</td></tr>
<tr><td>6</td><td>PB 1.7M DET</td><td>I</td><td>Normal/stereo discrimination input. "H" when AFM stereo tape playback.</td></tr>
<tr><td>7</td><td>JACK MONO</td><td>I</td><td>AUDIO IN/OUT jack monaural/stereo discrimination input. "H": monaural (No jack inserted in right terminal).</td></tr>
<tr><td>8</td><td>INT VD</td><td>O</td><td>Internal VD signal.</td></tr>
<tr><td>9</td><td>PBV</td><td>O</td><td>V sync as reference to character generator, communication and LANC period.
Lock to CAM VD (Pin (62)) when CAM. Lock to VTR sync (Pin (64)) when VTR.</td></tr>
<tr><td>10</td><td>(PC2/PPO18)</td><td></td><td rowspan="3">Not used.</td></tr>
<tr><td>11</td><td>(PC1/PPO17)</td><td></td></tr>
<tr><td>12</td><td>(PC0/PPO16)</td><td></td></tr>
<tr><td>13</td><td>MSW C</td><td>I</td><td rowspan="3">MODE switch input.
<table>
<tr><th></th><th>EJECT</th><th>USE</th><th>LS</th><th>GL</th><th>REC/PB</th><th>READY</th></tr>
<tr><td>MSW A</td><td>L</td><td>H</td><td>L</td><td>L</td><td>H</td><td>H</td></tr>
<tr><td>MSW B</td><td>L</td><td>H</td><td>H</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>MSW C</td><td>H</td><td>L</td><td>H</td><td>L</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>14</td><td>MSW B</td><td>I</td></tr>
<tr><td>15</td><td>MSW A</td><td>I</td></tr>
<tr><td>16</td><td>N.C (OUT)</td><td>O</td><td>Not used.</td></tr>
<tr><td>17</td><td>REC PROOF SW</td><td>I</td><td>Erasure protection switch input. "L" when REC prohibit.</td></tr>
<tr><td>18</td><td>ME/MP SW</td><td>I</td><td>ME/MP switch input. "L": MP, "H": ME.</td></tr>
<tr><td>19</td><td>E/L DET</td><td>I</td><td>Normal/Hi8 discrimination input. "H" when Hi8 tape playback.</td></tr>
<tr><td>20</td><td>VIDEO MUTE</td><td>O</td><td>Video output mute signal. "H": mute.</td></tr>
<tr><td>21</td><td>LINE MIX</td><td>O</td><td>AUDIO OUT monaural/stereo select signal. "H": monaural.</td></tr>
<tr><td>22</td><td>MX SEL 1</td><td>O</td><td rowspan="2">Matrix select signal.
<table>
<tr><th></th><th>STEREO</th><th>MAIN</th><th>SUB</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>L</td><td>H</td></tr>
<tr><td>MX SEL 2</td><td>L</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>23</td><td>MX SEL 2</td><td>O</td></tr>
<tr><td>24</td><td>MX ON/OFF</td><td>O</td><td>Matrix on/off signal. "H" when matrix on (stereo).</td></tr>
<tr><td>25</td><td>E/L</td><td>O</td><td>Normal/Hi8 select signal. "H" when Hi8 tape playback.</td></tr>
<tr><td>26</td><td>CAM/LINE</td><td>O</td><td>Camera input/line input select signal. "H" when camera input.</td></tr>
<tr><td>27</td><td>SP/LP</td><td>O</td><td>SP/LP select signal. "L": LP.</td></tr>
<tr><td>28</td><td>EDIT</td><td>O</td><td>Video circuit EDIT/NORMAL switch signal. "L": EDIT.</td></tr>
<tr><td>29</td><td>UNLOAD</td><td>O</td><td>Loading motor control signal. "H" or "H" pulse when unloading.</td></tr>
<tr><td>30</td><td>LOAD</td><td>O</td><td>Loading motor control signal. "H" or "H" pulse when loading.</td></tr>
<tr><td>31</td><td>LM LIM CONT</td><td>O</td><td>Loading motor limiter control signal. Temporary "H" when loading.</td></tr>
<tr><td>32</td><td>DRUM ON</td><td>O</td><td>Drum motor ON/OFF signal. "H" (approx. 1.3V) when drum ON.</td></tr>
<tr><td>33</td><td>DRUM FWD/RVS</td><td>O</td><td>Drum rotating direction control signal. Normally "H".</td></tr>
<tr><td>34</td><td>(PH2)</td><td></td><td rowspan="2">Not used.</td></tr>
<tr><td>35</td><td>(PH1)</td><td></td></tr>
<tr><td>36</td><td>REEL HALL CONT</td><td>O</td><td>Reel FG sensor (HALL element) power supply control signal.</td></tr>
<tr><td>37</td><td>MP</td><td></td><td>Connected to GND.</td></tr>
<tr><td>38</td><td>RESET</td><td>I</td><td>Reset signal. "L" when reset.</td></tr>
<tr><td>39</td><td>VSS</td><td></td><td>GND</td></tr>
<tr><td>40</td><td>XTAL</td><td>O</td><td rowspan="2">11.718 MHz clock oscillation circuit.</td></tr>
<tr><td>41</td><td>EXTAL</td><td>I</td></tr>
<tr><td>42</td><td>CS COSMO</td><td>I</td><td>Chip select signal from mode control microprocessor (IC501 on LC-40P board).</td></tr>
<tr><td>43</td><td>DATA TO SLAVE</td><td>I</td><td>Serial data input from mode control microprocessor.</td></tr>
</table>

Pin No.	Signal	I/O	Function
44	DATA TO MASTER	O	Serial data output to mode control microprocessor.
45	$\overline{\text{SCK}}$	I	Serial clock input from mode control microprocessor.
46	MONO REC	O	1.7 MHz REC AFM carrier ON/OFF signal. "H": OFF (monaural recording).
47	AUDIO MUTE	O	Audio mute signal. "H": mute.
48	TLV CHC	I	Tape LED monitor signal.
49	FULL MUTE	O	Video and audio mute signal. "H": mute.
50	SVSS		GND
51	AVREF		Analog port reference voltage. Connected to +5V.
52	AVDD		Analog port power supply (5V).
53	NC (IN)		Connected to GND.
54	TAPE END	I	Tape end detection signal. Normally "L". "H" pulse: tape end.
55	TAPE TOP	I	Tape top detection signal. Normally "L", "H" pulse: tape top.
56	$\overline{\text{DEW DET}}$	I	Dew condensation detection signal. "L" when dew condensation.
57	BATT SENSE	I	Battery voltage input for battery end detection. 1/2 divided by RB409.
58	ATF ERROR	I	ATF error, ATF lock error input.
59	S REEL FG	I	S reel FG signal input.
60	T REEL FG	I	T reel FG signal input.
61	NC (IN)	I	Connected to GND.
62	CAM VD	I	VD signal from camera circuit sync generator. V period pulse.
63	FLD	I	FIELD signal from camera circuit sync generator. 2V period pulse.
64	VTR SYNC	I	Composite sync signal separated from REC/PB Y signal.
65	SP/$\overline{\text{LP}}$ DET	I	Discriminates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
66	DRUM PG	I	Drum PG signal input. For drum phase servo. 26.7 msec period "H" pulse.
67	DRUM FG	I	Drum FG signal input. For drum speed servo. 4.4 msec period pulse.
68	CAP FG	I	Capstan FG signal input. For capstan speed servo. Approx. 1145.5 Hz when REC/PB.
69	DS ON	O	Data screen ON/OFF signal. "H": ON.
70	ME/$\overline{\text{MP}}$	O	Video circuit MP/ME switch signal. "H" when ME type tape used.
71	TAPE LED ON	O	Tape LED ON/OFF signal. 200 msec period "H" pulse when REC/PB.
72	VA PB MODE	O	Video, audio circuit REC/PB switch signal. "H": PB.
73	CAP PWM	O	Capstan error signal output. 20.15 μsec PWM signal.
74	DRUM PWM	O	Drum error signal output. 20.15 μsec PWM signal.
75	CFG HMS	I	Capstan FG signal input. For tape counter.
76	$\overline{\text{S JACK IN}}$	I	Connected to +5V.
77	LANC IN	I	Control L serial data input.
78	LANC OUT	O	Control L serial data output.
79	$\overline{\text{LM LIM ON}}$	I	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
80	$\overline{\text{Hi8 MP SW}}$	I	Connected to +5V.
81	COMPOSITE REC	O	Not used.
82	CLOG DET	I	Head clog detection signal. "L" when no trouble.
83	REF PILOT	O	ATF servo reference pilot signal. Synchronized with drum rotation to output by selecting four frequencies. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz.
84	(PIO/PCK)		Connected to GND.
85	(PKO)		
86	VSS		GND
87	VDD		+5 power supply.
88	VPP		+5 power supply.

Pin No.	Signal	I/O	Function
89	MUTE 2B	O	Control signal for protecting crosstalk from the other three heads during PB. 4V period pulse when PB/REC ("L": active head only during PB/REC). "L" when other cases.
90	MUTE 1B	O	
91	MUTE 2A	O	
92	MUTE 1A	O	
93	$\overline{\text{REC 2B}}$	O	REC head (1A, 1B, 2A and 2B) select control signal. 4V period pulse when REC ("L": head only during REC). "H" when other cases.
94	$\overline{\text{REC 1B}}$	O	
95	$\overline{\text{REC 2A}}$	O	
96	$\overline{\text{REC 1A}}$	O	
97	RF SWP	O	RF switching pulse signal. 25 Hz, 50% duty pulse.
98	1/2 RF SWP	O	1/2 RF switching pulse signal. 12.5 Hz, 50% duty pulse.
99	CAP ON	O	Capstan driver ON/OFF control signal. "H" when capstan ON.
100	CAP FWD/RVS	O	Capstan rotating direction control signal. "H": FWD, "L": RVS.

I/O	Function
O	Control signal for protecting crosstalk from the other three heads during PB. 4V period pulse when PB/REC ("L": active head only during PB/REC). "L" when other cases.
O	
O	
O	
O	REC head (1A, 1B, 2A and 2B) select control signal. 4V period pulse when REC ("L": head only during REC). "H" when other cases.
O	
O	
O	
O	RF switching pulse signal. 25 Hz, 50% duty pulse.
O	1/2 RF switching pulse signal. 12.5 Hz, 50% duty pulse.
O	Capstan driver ON/OFF control signal. "H" when capstan ON.
O	Capstan rotating direction control signal. "H": FWD, "L": RVS.

3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC501 ON LC-40P BOA

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O	LCD	Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V)
2	S13	S13	O	LCD	
3	S14	S14	O	LCD	
4	S15	S15	O	LCD	
5	S16	S16	O	LCD	
6	S17	S17	O	LCD	
7	S18	S18	O	LCD	
8	S19	S19	O	LCD	
9	S20	S20	O		Not used.
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	$\overline{\text{EEPROM CS}}$	O		Chip select signal to EEPROM (IC403 on VS- 1/2V period "L" pulse.
14	S25/BP1	$\overline{\text{MK CS}}$	O		Not used.
15	S26/BP2	TG STBY	O	CAM	Power save control signal to timing generator Normally "L".
16	S27/BP3	IN/$\overline{\text{OUT}}$	O	VA	Audio input/output control signal. "H": input.
17	S28/BP4	TITLE CS	O	CAM	Chip select signal to titler. (IC711 on VC-112
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller 1V period "L" pulse.
19	S30/BP6	S RAM CS	O	CAM	Chip select signal to title memory (SRAM). "H" when superimpose ON.
20	S31/BP7	$\overline{\text{CAM CS}}$	O	CAM	Chip select signal to camera controller (IC709 1V period "L" pulse.
21	COM0	COM 0	O	LCD	Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V)
22	COM1	COM 1	O	LCD	
23	COM2	COM 2	O	LCD	
24	COM3	COM 3	O	LCD	
25	BIAS	BIAS	O		Bias voltage output for voltage deviding resist
26	VLC0	VCC 0	I		Power source 0 input (5V).
27	VLC1	VCC 1	I		Power source 1 input (3.3V). Power source
28	VLC2	VCC 2	I		Power source 2 input (1.7V).
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse outpu pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	$\overline{\text{SYSTEM RESET}}$	O	all	Output signal to reset each IC when power is
32	P43	$\overline{\text{TALLY}}$	O	EVF	Tally LED ON/OFF signal. "L": ON.
33	VSS	VSS			GND
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when correspondin other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	$\overline{\text{BATT IN}}$	I		Clock select to 32 kHz when "L" and to 4.19 turned on. "L" is select.
39	P01/$\overline{\text{SCK}}$	$\overline{\text{SCK}}$	O	all	Serial clock output terminal, Serial clock (2
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μS)
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μS)

3-11. MODE CONTROL MICROPROCESSOR PIN FUNCTION (IC501 ON LC-40P BOARD: μPD75316)

Pin No.	Port Name	Signal	I/O	Connection	Function
1	S12	S12	O	LCD	Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V)
2	S13	S13	O	LCD	
3	S14	S14	O	LCD	
4	S15	S15	O	LCD	
5	S16	S16	O	LCD	
6	S17	S17	O	LCD	
7	S18	S18	O	LCD	
8	S19	S19	O	LCD	
9	S20	S20	O		Not used.
10	S21	S21	O		
11	S22	S22	O		
12	S23	S23	O		
13	S24/BP0	EEPROM CS	O		Chip select signal to EEPROM (IC403 on VS-93P board). 1/2V period "L" pulse.
14	S25/BP1	MK CS	O		Not used.
15	S26/BP2	TG STBY	O	CAM	Power save control signal to timing generator (IC801 on VC-112P board). Normally "L".
16	S27/BP3	IN/OUT	O	VA	Audio input/output control signal. "H": input. "L": output.
17	S28/BP4	TITLE CS	O	CAM	Chip select signal to titler. (IC711 on VC-112P board). 1V period "L" pulse.
18	S29/BP5	REMO CS	O		Chip select signal to sircs remote controller (IC503 on LC-40P board). 1V period "L" pulse.
19	S30/BP6	S RAM CS	O	CAM	Chip select signal to title memory (SRAM). (IC710 on VC-112P board). "H" when superimpose ON.
20	S31/BP7	CAM CS	O	CAM	Chip select signal to camera controller (IC709 on VC-112P board). 1V period "L" pulse.
21	COM0	COM 0	O	LCD	Common terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V)
22	COM1	COM 1	O	LCD	
23	COM2	COM 2	O	LCD	
24	COM3	COM 3	O	LCD	
25	BIAS	BIAS	O		Bias voltage output for voltage deviding resistor (5V).
26	VLC0	VCC 0	I		Power source 0 input (5V).
27	VLC1	VCC 1	I		Power source 1 input (3.3V). Power source for LCD dirve.
28	VLC2	VCC 2	I		Power source 2 input (1.7V).
29	P40	K OUT 4	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
30	P41	K OUT 5	O	all	
31	P42	SYSTEM RESET	O	all	Output signal to reset each IC when power is turned on. Normally "H".
32	P43	TALLY	O	EVF	Tally LED ON/OFF signal. "L": ON.
33	VSS	VSS			GND
34	P50	K OUT 0	O	all	KEY matrix output. 1V period "L" pulse output when corresponding key is pressed. "L" when other cases.
35	P51	K OUT 1	O	all	
36	P52	K OUT 2	O	all	
37	P53	K OUT 3	O	all	
38	P00/INT4	BATT IN	I		Clock select to 32 kHz when "L" and to 4.19 MHz with "H" when Battery is turned on. "L" is select.
39	P01/SCK	SCK	O	all	Serial clock output terminal, Serial clock (2 μS) communication.
40	P02/SO/SB0	DATA TO SLVE	O	all	Serial bus output terminal, Serial clock (2 μS) communication.
41	P03/SI/SB1	DATA TO MSTR	I	all	Serial bus input terminal, Serial clock (2 μS) communication.
42	P10/INT0	SYSTEM SYNC	I	all	(Edge detection vector interruption), System synchronization input port from CXP80624 (IC401 on VS-93P board).
43	P11/INT1	LI PRE END	I		(Edge detection vector interruption), Lithium PRE END is selected with "L".
44	P12/INT2	LANC PWR ON	I		Power on signal input from wired remote control. "L" when power switch pressed.
45	P13/TIO	TITLE BUSY	I	CAM	Titler IC (IC711 on VC-112P board) busy signal. Normally "L".
46	P20/PT00	VTR DD ON	O	PS	VTR power source (MOTOR 5V, VIDEO 5V, AUDIO 5V, EVF 5V, D5V, RP 5V, CORE 4V, D4V) control signal. "H" when power switch is in "VTR" or "CAMERA" position.
47	P21	CAM DD ON	O	PS	CAMERA power source (CAM 5V, +15V, –9V) control signal. "H" when power switch is in "CAMERA" position.
48	P22/PCL	VIDEO D/A CS	O	VA	Serial data load signal to video circuit EVR (IC156, 158 on VS-93P board). 1V period "H" pulse.
49	P23/BUZ	AUTO LOCK LED	O		Not used.
50	P30/LCDCL	VIDEO CS	O	VA	Chip select signal to Y process IC (IC151 on VS-93P board). 1V period "L" pulse.
51	P31/SYNC	VTR COSM CS	O		Chip select signal to mechanism controller (IC401 on VS-93P board). 1V period "L" pulse.
52	P32	SG CS	O	CAM	Chip select signal to sync generator (IC704 on VC-112P board). 1V period "L" pulse.
53	P33	CG STBY	O		Standby signal for character generator (IC402 on VS-93P board). 1V period "H" pulse train.
54	VDD	VDD			VDD
55	XT1	XT1	I		SUB system clock. 32 kHz oscillation terminal.
56	XT2	XT2			
57	N.C.	N.C.			Connected to +5V.
58	X1	X1	I		Main system clock. 4.19 MHz oscillation terminal.
59	X2	X2	I		
60	P60/KK0	K IN 0	I	all	KEY matrix input. 1V period "L" pulse input when corresponding key is pressed. "H" when other case.
61	P61/KR1	K IN 1	I	all	
62	P62/KR2	K IN 2	I	all	
63	P63/KR3	K IN 3	I	all	
64	P70/KR4	K IN 4	I	all	
65	P71/KP5	K IN 5	I	all	
66	P72/KP6	K IN 6	I	all	
67	P73/KP7	CC DOWN	I	MD	Cassette compartment lock switch input. "L": Lock.
68	RESET	RESET	I		System reset input. "L": Reset, Normally: "H".
69	S0	CLK CHK	O	LCD	Segment terminal drive signal to LCD. (Four value output of 0, 1.7, 3.3, 5V)
70	S1	S1	O	LCD	
71	S2	S2	O	LCD	
72	S3	S3	O	LCD	
73	S4	S4	O	LCD	
74	S5	S5	O	LCD	
75	S6	S6	O	LCD	
76	S7	S7	O	LCD	
77	S8	S8	O	LCD	
78	S9	S9	O	LCD	
79	S10	S10	O	LCD	
80	S11	S11	O	LCD	

3-12. INTERFACE

3-12-1. System Control – Video/Audio Block Interface (VS-93P Board)

NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB·PAUSE	FRAME	SLOW	SHUTTLE EDIT *17		REC *18	REC *18 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
SP/$\overline{\text{LP}}$	O	IC401 ㉗	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*2	*2	*19	H/L	H/L	*19	*2	*2	*2	*2
VA PB MODE	O	IC401 (72)	L	L	L	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE *13	O	IC401 ㊼	L	L	L	H	H	L	H	H	H	H	H	H	H	L	L	L	L	H	H	L	H
VIDEO MUTE	O	IC401 ⑳	*14	*14	*14	*15	*15	*15	*15	*15	*15	*15	*15	*15	*15	*14	*14	L	L	*15	*15	*15	*15
CAM/$\overline{\text{LINE}}$	O	IC401 ㉖	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC401 ③	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	L	*5	L	L	L	L	L	*5	L	*5
RP PB MODE	O	IC401 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{FE ON}}$	O	IC401 ②	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
$\overline{\text{1/2 RF SWP}}$	O	IC401 (98)	H	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RF SWP	O	IC401 (97)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
MUTE 2B	O	IC401 (89)	L	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*16	*16	*16	*16	*8	*8	*8	*8
MUTE 1B	O	IC401 (90)																					
MUTE 2A	O	IC401 (91)																					
MUTE 1A	O	IC401 (92)																					
FULL MUTE	O	IC401 ㊾	*20	*20	*20	L	L	*20	L	L	L	L	L	L	L	*20	*20	L	L	L	L	L	L

NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SERACH		PB· PAUSE	FRAME	SLOW	SHUTTLE EDIT *17		REC *18	REC *18 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
$\overline{\text{REC2B}}$	O	IC401 (93)	H	H	H	H	H	H	H	H	H	H	H	H	H	*9	H	H	*9	H	H	H	H
$\overline{\text{REC1B}}$	O	IC401 (94)																					
$\overline{\text{REC2A}}$	O	IC401 (95)																					
$\overline{\text{REC1A}}$	O	IC401 (96)																					
SP/$\overline{\text{LP}}$ DET	I	IC401 (65)	L	*10	*10	*10	*10	L	*10	*10	*10			L	*10	H	H	H	H	L	*10	L	*10
CLOG DET	I	IC401 (82)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC401 (64)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.
*2. Outputs discrimination result of the playback tape. "H" : SP mode, "L": LP mode.
*5. False VD signal
*6. 12.5 Hz duty 50% pulse (synchronized with drum rotation)
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*8. See time chart 1.
*9. See time chart 2.
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area or drop out area on tape. Head clog detection input.
*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)

*13. "H" during load/unload when camera mode.
*14. "L" when external input (video) present. "H" when other cases.
*15. "H" when tape no signal. "L" when other cases.
*16. See time chart 1.
*17. Edit search pressed when playback pause mode.
*18. E, Australian model only.
*19. By REC MODE switch. "H": SP mode, "L": LP mode.
*20. "H" when no video signal. "L" when other cases.

3-12-2. System Control – Servo Block Interface

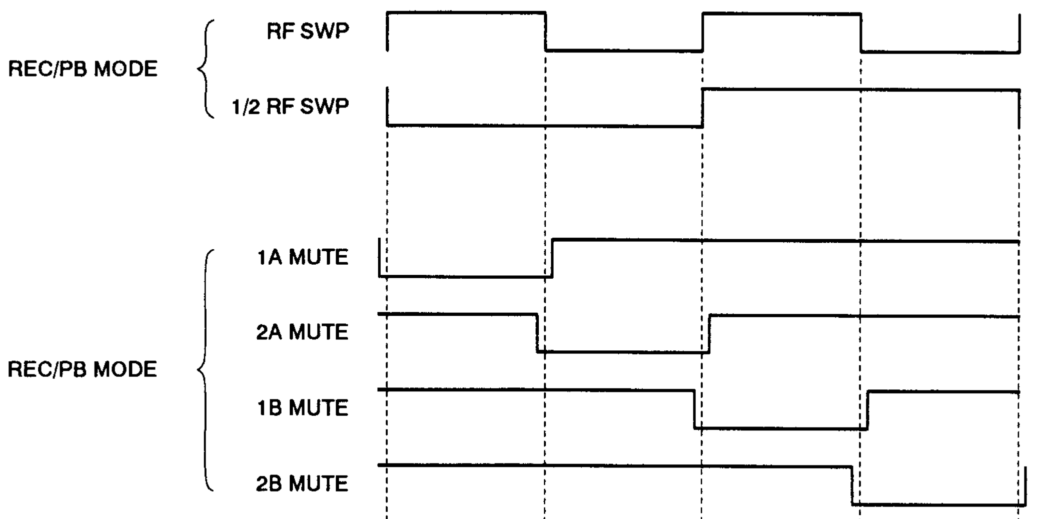
NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB· PAUSE	FRAME	SLOW	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	RVS					FWD	RVS	FWD	RVS
T.REEL FG	I	IC401 (60)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC401 (59)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC401 (58)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC401 (66)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC401 (67)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC401 (68), (75)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC401 (99)	L	H	H	H	H	H	H	H	L	*8	*8	*15	*15	H	L	L	H	H	H	H	H
REF PILOT	O	IC401 (83)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC401 ①	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM FWD/$\overline{\text{RVS}}$ *10	O	IC401 ㉝	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ $\overline{\text{RVS}}$	O	IC401 (100)	L	H	L	H	L	H	H	L	L	*8	*8	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC401 (74)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC401 (73)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
$\overline{\text{LM LIM CONT}}$ *11	O	IC401 ㉛	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC401 ㉜	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Pulse input amplitude modulated by reel rotation. (200 msec period when REC/PB)
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 37.5 Hz.
*4. Six FG pulses input per one drum rotation, approx. 225 Hz.
*5. 360 FG pulses input per one capstan rotation. Approx. 1145.5 Hz when REC/PB (SP).
*6. Four frequencies output synchronized with drum rotation. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz and f4=146.5 kHz
*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load/unload (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search pressed when playback pause mode.
*14. E, Australian model only.

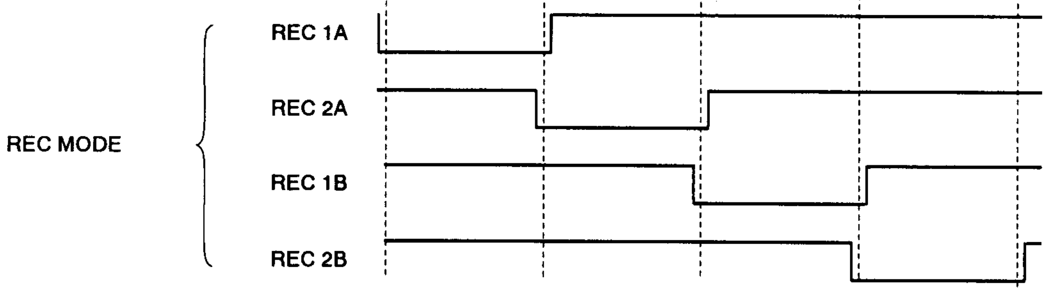
TR MODE								CAMERA MODE					
SEARCH	PB· PAUSE	FRAME	SLOW	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
REVIEW				FWD	RVS					FWD	RVS	FWD	RVS
*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
H	L	*8	*8	*15	*15	H	L	L	H	H	H	H	H
*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
H	H	H	H	H	H	L	H	H	L	H	H	H	H
H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	*8	*8	H	L	H	L	L	H	H	L	H	L
*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
*9	L	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
L	L	L	L	L	L	L	L	L	L	L	L	L	L
H	H	H	H	H	H	H	H	H	H	H	H	H	H

*7. f2 (117.2 kHz) output
*8. "H" pulse when tape run.
*9. 21.5 μsec period PWM signal
*10. Normally "H". Temporary "L" when load/unload (drum reverse rotation).
*11. Temporary "H" when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search pressed when playback pause mode.
*14. E, Australian model only.

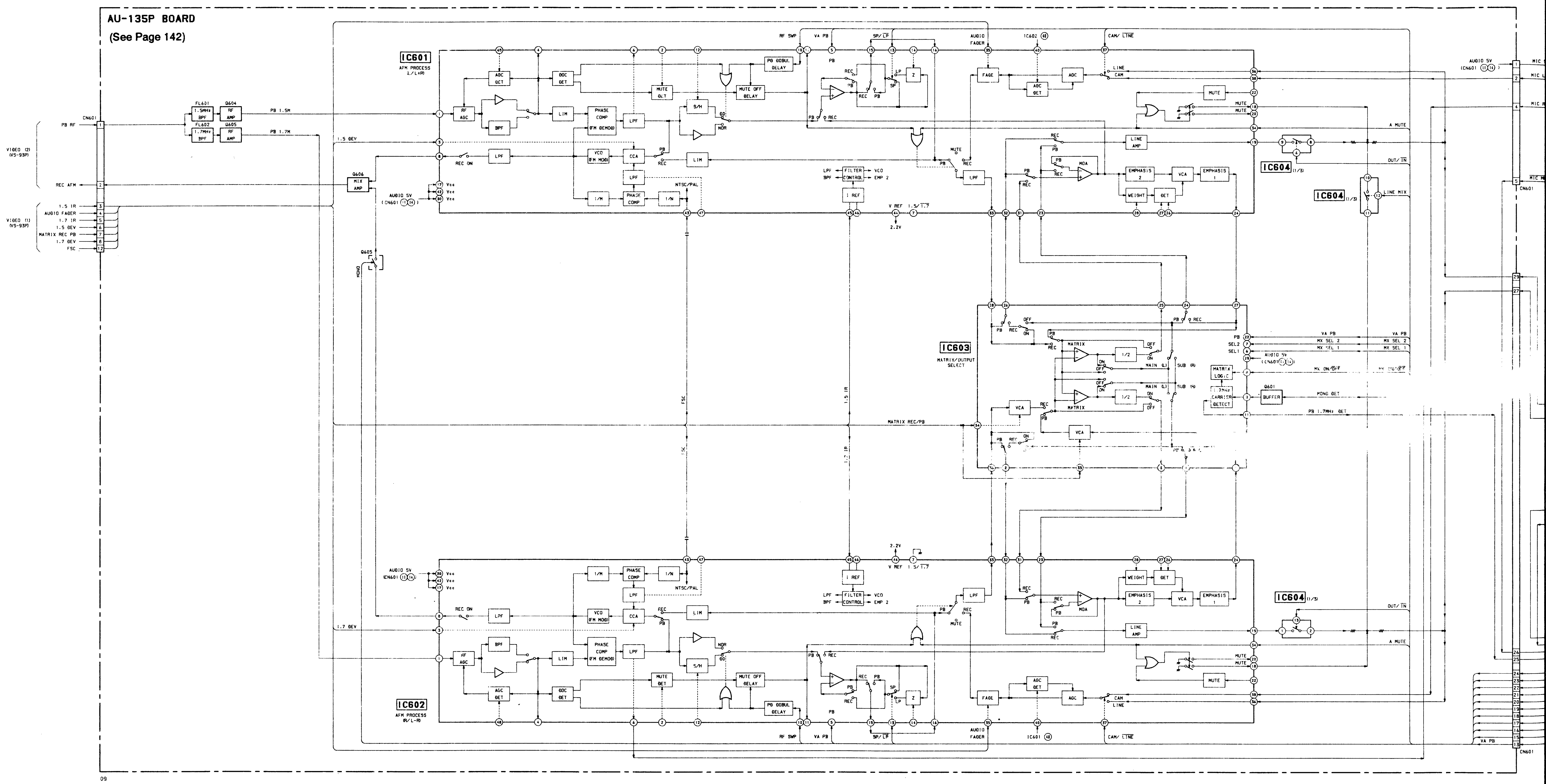
TIME CHART 1


REC/PB MODE
RF SWP
1/2 RF SWP
REC/PB MODE
1A MUTE
2A MUTE
1B MUTE
2B MUTE

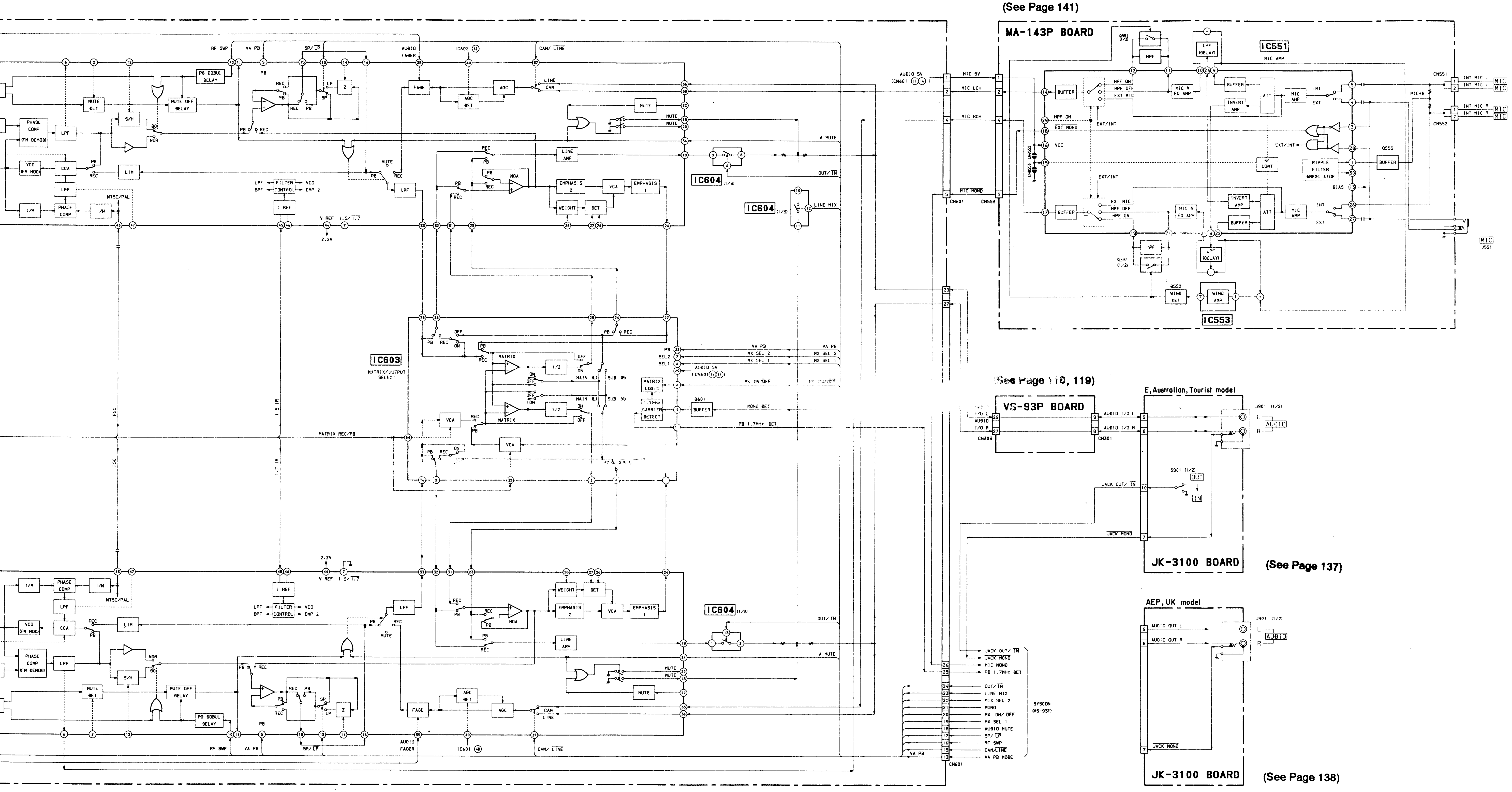
TIME CHART 2


REC MODE
REC 1A
REC 2A
REC 1B
REC 2B

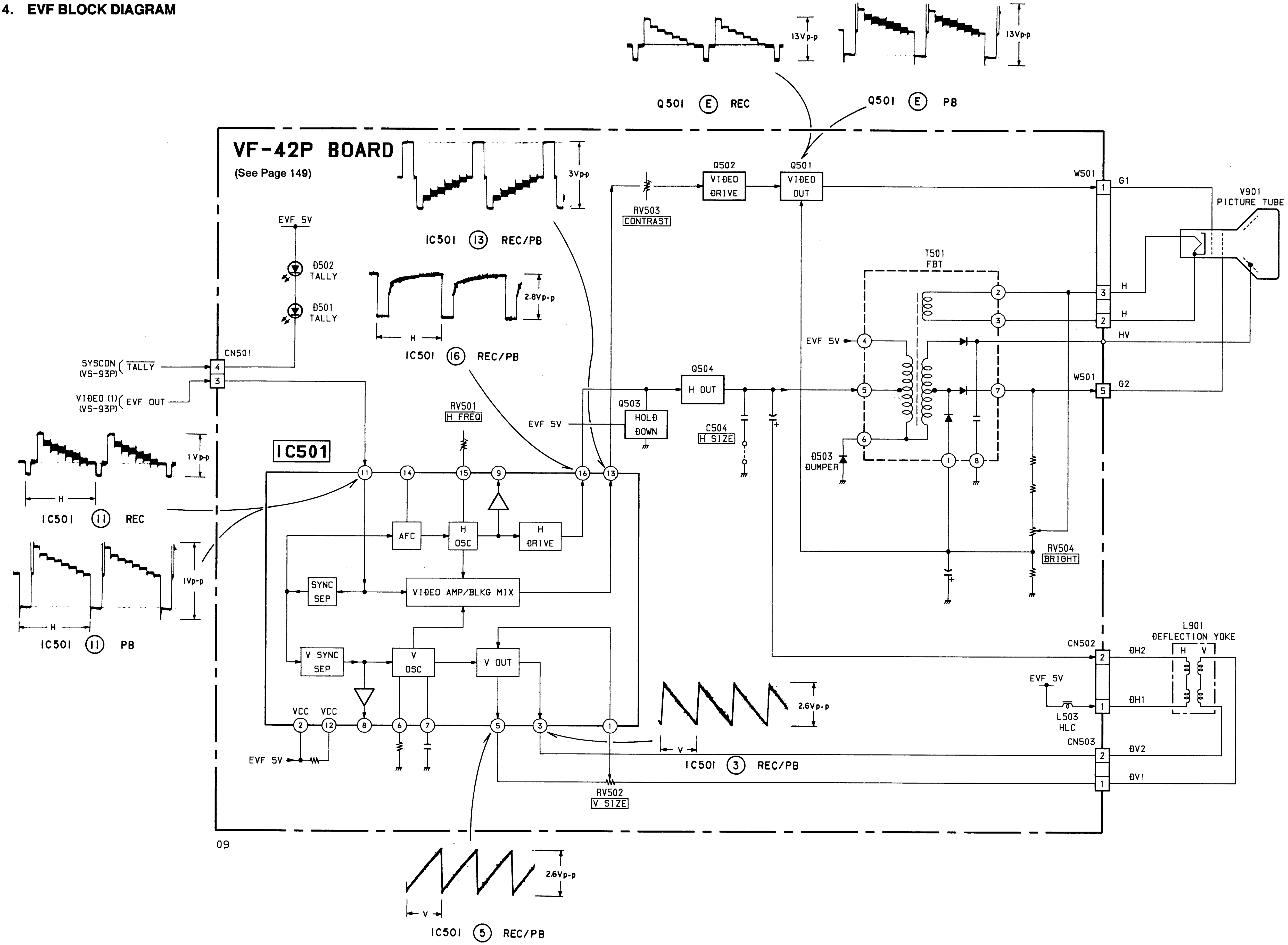
3-13. AUDIO BLOCK DIAGRAM



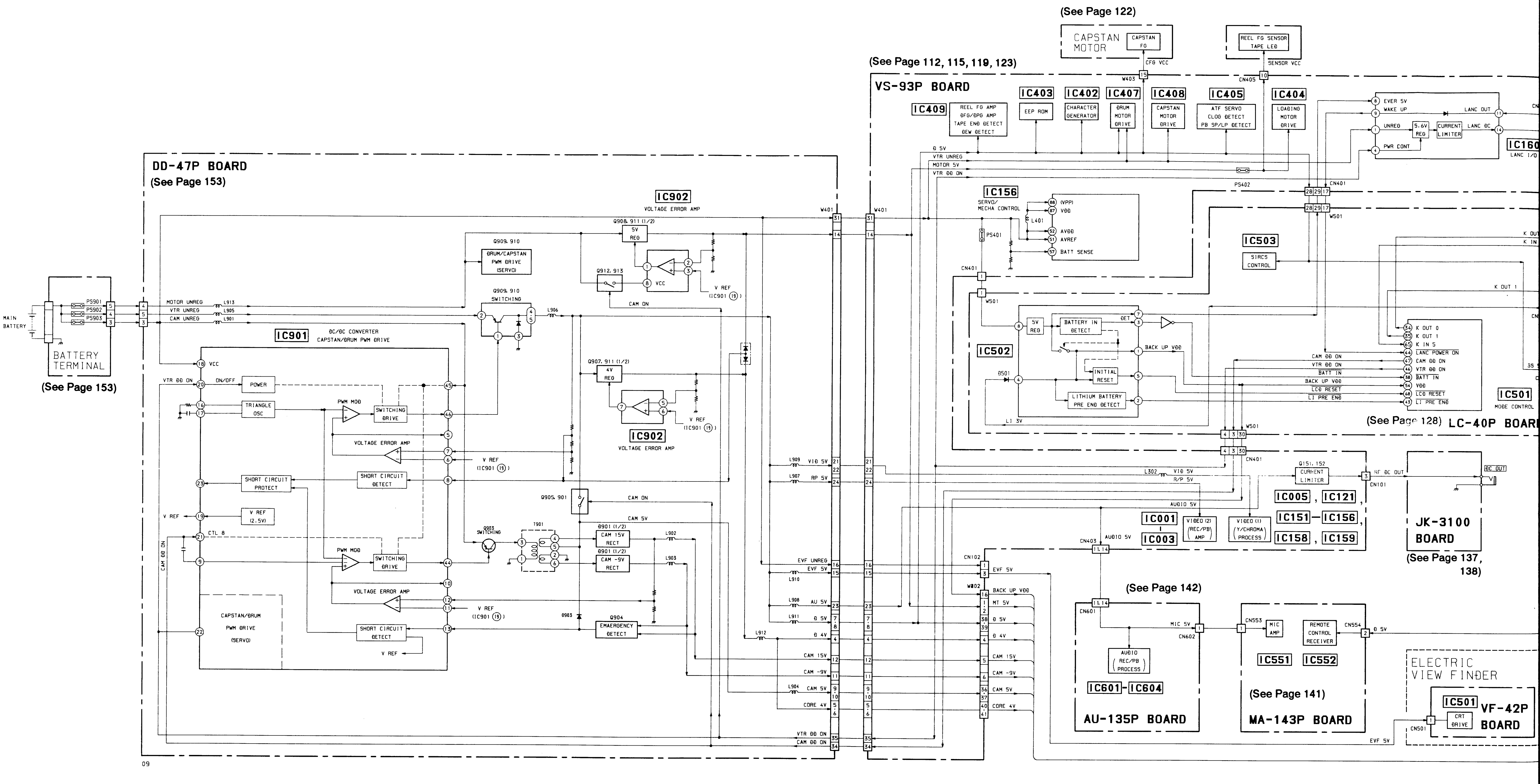
AU-135P BOARD
(See Page 142)
CN601
PB RF
REC AFM
VIDEO (2) (VS-93P)
VIDEO (1) (VS-93P)
1.5 IR
AUDIO FADER
1.7 IR
1.5 DEV
MATRIX REC PB
1.7 DEV
FSC
FL601 1.5MHz BPF
FL602 1.7MHz BPF
Q604 RF AMP
Q605 RF AMP
PB 1.5M
PB 1.7M
Q606 MIX AMP
Q605
MONO
AUDIO 5V (CN601 ⑪⑭)
Vcc
IC601
AFM PROCESS 1/L+R
IC602
AFM PROCESS R/L-R
RF AGC
AGC DET
BPF
LIM
DOC DET
PHASE COMP (FM DEMOD)
LPF
VCO (FM MOD)
CCA
1/M
1/N
PHASE COMP
NTSC/PAL
REC ON
MUTE DET
S/H
DO
NOR
MUTE OFF DELAY
PG DOBUL DELAY
RF SWP
VA PB
SP/LP
PB
REC
Z
LPF
BPF
FILTER CONTROL
VCO
EMP 2
I REF
V REF 1.5/1.7
2.2V
AUDIO FADER
IC602 ⑩
IC601 ⑩
CAM/LINE
FADE
AGC
AGC DET
LINE
CAM
MUTE
A MUTE
LINE AMP
NOA
EMPHASIS 2
VCA
EMPHASIS 1
WEIGHT
DET
IC604 (1/3)
OUT/IN
LINE MIX
AUDIO 5V (CN601 ⑪⑭)
MIC
IC603
MATRIX/OUTPUT SELECT
MATRIX
1/2
ON
OFF
MAIN (L)
SUB (R)
PB
SEL2
SEL1
VA PB
MX SEL 2
MX SEL 1
MX ON/OFF
MATRIX LOGIC
1.7MHz CARRIER DETECT
Q601 BUFFER
MONO DET
PB 1.7MHz DET
MATRIX REC/PB
1.5 IR
1.7 IR
FSC
1.5 DEV
1.7 DEV
09


(See Page 141)
MA-143P BOARD
IC551
MIC AMP
IC553
WIND AMP
WIND DET
BUFFER
ATT
MIC & EQ AMP
INVERT AMP
RIPPLE FILTER &REGULATOR
NF CONT
HPF
LPF (DELAY)
INT MIC L
INT MIC R
MIC
J551
CN551
CN552
CN553
MIC 5V
MIC LCH
MIC RCH
MIC MONO
AUDIO 5V
IC603
MATRIX/OUTPUT SELECT
IC604
LINE MIX
OUT/IN
A MUTE
LINE AMP
EMPHASIS 1
EMPHASIS 2
VCA
WEIGHT
DET
NOA
MATRIX
MATRIX LOGIC
CARRIER DETECT
Q601
BUFFER
MONO DET
PB 1.7MHz DET
MATRIX REC/PB
FADE
AGC
AGC DET
AUDIO FADER
CAM/LINE
SP/LP
RF SWP
VA PB
PB DOBUL DELAY
MUTE OFF DELAY
MUTE DET
S/H
PHASE COMP
FM DEMOD
FM MOD
VCO
CCA
LPF
LIM
1/M
1/N
NTSC/PAL
FILTER CONTROL
I REF
V REF 1.5/1.7
2.2V
FSC
1.5IR
CN601
IC601
IC602
See Page 118, 119)
VS-93P BOARD
CN303
CN301
AUDIO I/O L
AUDIO I/O R
E, Australian, Tourist model
J901 (1/2)
AUDIO
S901 (1/2)
OUT
IN
JACK OUT/IN
JACK MONO
JK-3100 BOARD
(See Page 137)
AEP, UK model
AUDIO OUT L
AUDIO OUT R
JK-3100 BOARD
(See Page 138)
JACK OUT/IN
JACK MONO
MIC MONO
PB 1.7MHz DET
OUT/IN
LINE MIX
MIX SEL 2
MONO
MX ON/OFF
MX SEL 1
AUDIO MUTE
SP/LP
RF SWP
CAM/LINE
VA PB MODE
SYSCON (VS-93P)

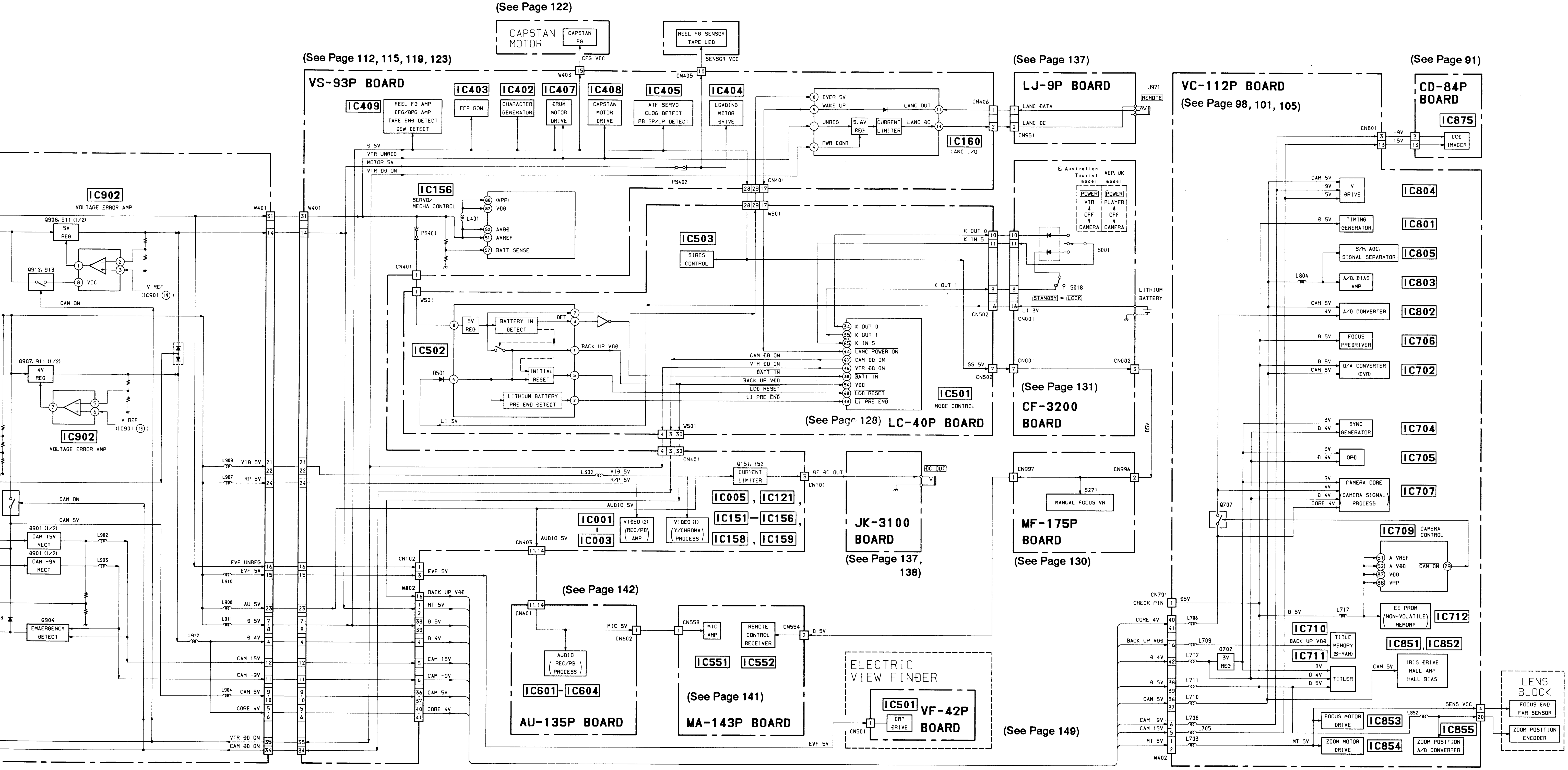
3-14. EVF BLOCK DIAGRAM


13Vp-p
13Vp-p
Q501 Ⓔ REC
Q501 Ⓔ PB
VF-42P BOARD
(See Page 149)
3Vp-p
IC501 ⑬ REC/PB
EVF 5V
D502 TALLY
D501 TALLY
2.8Vp-p
H
IC501 ⑯ REC/PB
CN501
SYSCON (VS-93P) TALLY
VIDEO (1) (VS-93P) EVF OUT
1Vp-p
H
IC501 ⑪ REC
1Vp-p
H
IC501 ⑪ PB
IC501
RV501 H FREQ
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
VCC
EVF 5V
RV502 V SIZE
2.6Vp-p
V
IC501 ③ REC/PB
2.6Vp-p
V
IC501 ⑤ REC/PB
09
RV503 CONTRAST
Q502 VIDEO DRIVE
Q501 VIDEO OUT
W501
G1
V901 PICTURE TUBE
T501 FBT
H
H
HV
EVF 5V
Q504 H OUT
Q503 HOLD DOWN
EVF 5V
C504 H SIZE
D503 DUMPER
W501
G2
RV504 BRIGHT
CN502
DH2
L901 DEFLECTION YOKE
H
V
EVF 5V
DH1
L503 HLC
CN503
DV2
DV1

3-15. POWER BLOCK DIAGRAM



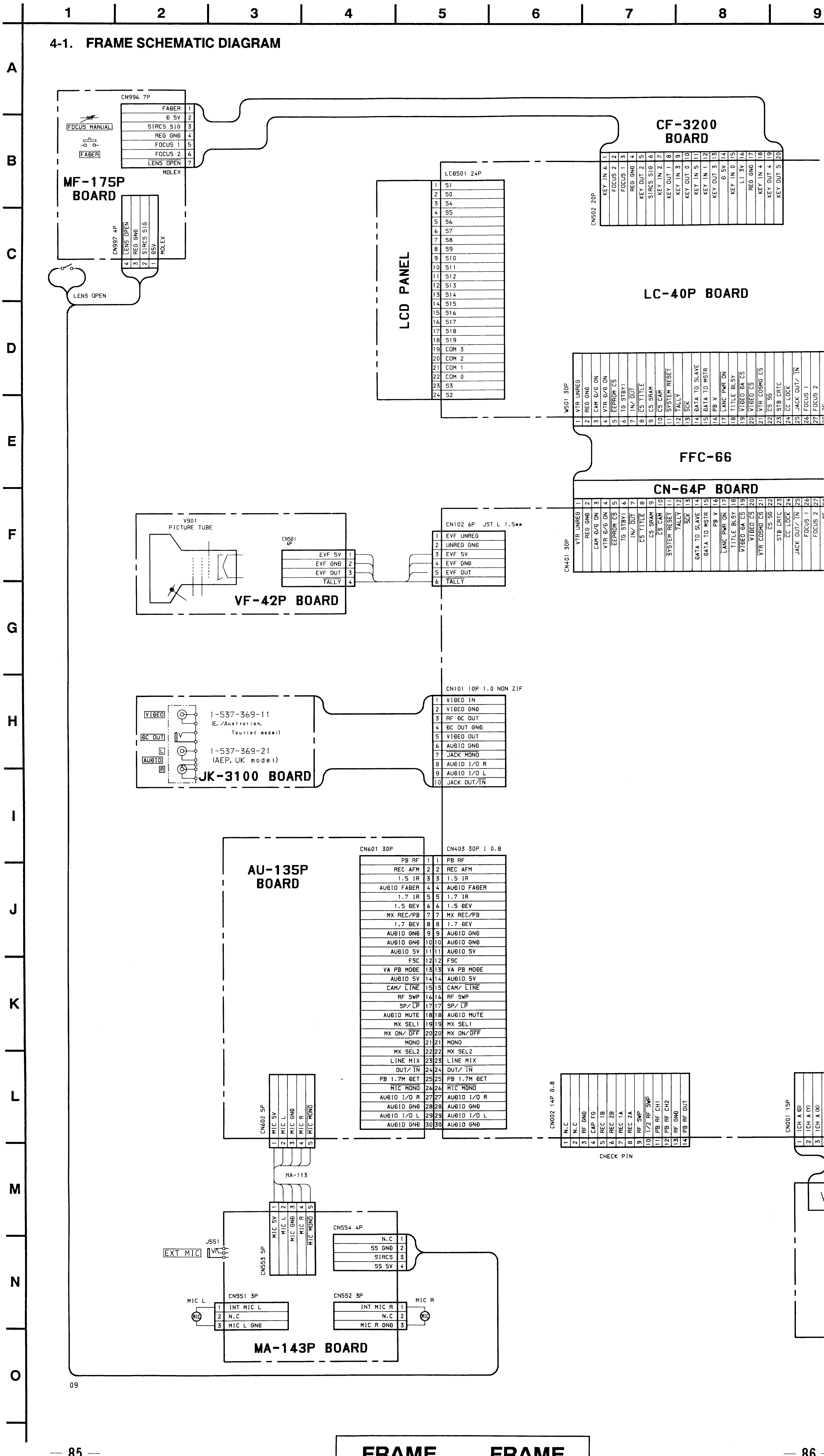
(See Page 122)
CAPSTAN MOTOR
CAPSTAN FG
CFG VCC
REEL FG SENSOR TAPE LED
SENSOR VCC
(See Page 112, 115, 119, 123)
VS-93P BOARD
IC409
REEL FG AMP DFG/DPG AMP TAPE END DETECT DEW DETECT
IC403
EEP ROM
IC402
CHARACTER GENERATOR
IC407
DRUM MOTOR DRIVE
IC408
CAPSTAN MOTOR DRIVE
IC405
ATF SERVO CLOG DETECT PB SP/LP DETECT
IC404
LOADING MOTOR DRIVE
W403
CN405
EVER 5V
WAKE UP
UNREG
5.6V REG
CURRENT LIMITER
LANC OUT
LANC DC
PWR CONT
IC160
LANC I/O
D 5V
VTR UNREG
MOTOR 5V
VTR DD ON
PS402
CN401
W501
IC156
SERVO/ MECHA CONTROL
(VPP)
VDD
L401
AVDD
AVREF
BATT SENSE
PS401
IC503
SIRCS CONTROL
K OUT 1
K OUT
K IN
IC502
5V REG
BATTERY IN DETECT
DET
BACK UP VDD
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
D501
LI 3V
K OUT 0
K OUT 1
K IN S
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
BACK UP VDD
VDD
LCD RESET
LI PRE END
IC501
MODE CONTROL
(See Page 128)
LC-40P BOARD
DD-47P BOARD
(See Page 153)
IC902
VOLTAGE ERROR AMP
Q908, 911 (1/2)
5V REG
Q909, 910
DRUM/CAPSTAN PWM DRIVE (SERVO)
Q912, 913
VCC
V REF (IC901 ⑲)
CAM ON
Q909, 910 SWITCHING
L906
MAIN BATTERY
PS901
PS902
PS903
BATTERY TERMINAL
(See Page 153)
MOTOR UNREG
VTR UNREG
CAM UNREG
L913
L905
L901
IC901
DC/DC CONVERTER CAPSTAN/DRUM PWM DRIVE
VCC
VTR DD ON
ON/OFF
POWER
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF (IC901 ⑲)
Q907, 911 (1/2)
4V REG
IC902
VOLTAGE ERROR AMP
SHORT CIRCUIT PROTECT
SHORT CIRCUIT DETECT
V REF
V REF (2.5V)
CTL 8
CAM DD ON
Q905, 901
CAM ON
CAM 5V
Q903 SWITCHING
T901
D901 (1/2)
CAM 15V RECT
D901 (1/2)
CAM -9V RECT
L902
L903
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF (IC901 ⑲)
D903
Q904
EMAERGENCY DETECT
CAPSTAN/DRUM PWM DRIVE (SERVO)
SHORT CIRCUIT DETECT
V REF
W401
L909
VIO 5V
L907
RP 5V
EVF UNREG
EVF 5V
L910
L908
AU 5V
L911
D 5V
L912
D 4V
CAM 15V
CAM -9V
L904
CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
Q151, 152
CURRENT LIMITER
RF DC OUT
CN101
DC OUT
JK-3100 BOARD
(See Page 137, 138)
L302
VIO 5V
R/P 5V
AUDIO 5V
IC001 - IC003
VIDEO (2) (REC/PB) AMP
VIDEO (1) (Y/CHROMA) PROCESS
IC005, IC121, IC151 – IC156, IC158, IC159
CN403
AUDIO 5V
CN102
EVF 5V
W802
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
(See Page 142)
CN601
MIC 5V
CN602
AUDIO REC/PB PROCESS
IC601-IC604
AU-135P BOARD
CN553
MIC AMP
REMOTE CONTROL RECEIVER
CN554
D 5V
IC551
IC552
(See Page 141)
MA-143P BOARD
ELECTRIC VIEW FINDER
IC501
CRT DRIVE
VF-42P BOARD
CN501
EVF 5V
09


(See Page 122)
CAPSTAN MOTOR
CAPSTAN FG
CFG VCC
REEL FG SENSOR TAPE LED
SENSOR VCC
(See Page 112, 115, 119, 123)
VS-93P BOARD
IC409
REEL FG AMP
DFG/DPG AMP
TAPE END DETECT
DEW DETECT
IC403
EEP ROM
IC402
CHARACTER GENERATOR
IC407
DRUM MOTOR DRIVE
IC408
CAPSTAN MOTOR DRIVE
IC405
ATF SERVO
CLOG DETECT
PB SP/LP DETECT
IC404
LOADING MOTOR DRIVE
W403
CN405
EVER 5V
WAKE UP
UNREG
5.6V REG
CURRENT LIMITER
PWR CONT
LANC OUT
LANC DC
CN406
IC160
LANC I/O
D 5V
VTR UNREG
MOTOR 5V
VTR DD ON
PS402
CN401
W501
IC156
SERVO/ MECHA CONTROL
(VPP)
VDD
AVDD
AVREF
BATT SENSE
L401
PS401
IC503
SIRCS CONTROL
CN401
W501
IC502
5V REG
BATTERY IN DETECT
DET
BACK UP VDD
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
D501
LI 3V
CAM DD ON
VTR DD ON
BATT IN
BACK UP VDD
LCD RESET
LI PRE END
K OUT 0
K OUT 1
K IN S
LANC POWER ON
CAM DD ON
VTR DD ON
BATT IN
VDD
LCD RESET
LI PRE END
K OUT 0
K IN S
K OUT 1
SS 5V
CN502
IC501
MODE CONTROL
(See Page 128)
LC-40P BOARD
IC902
VOLTAGE ERROR AMP
Q908, 911 (1/2)
5V REG
Q912, 913
VCC
V REF (IC901 ⑲)
CAM ON
Q907, 911 (1/2)
4V REG
V REF (IC901 ⑮)
IC902
VOLTAGE ERROR AMP
CAM ON
CAM 5V
Q901 (1/2)
CAM 15V RECT
Q901 (1/2)
CAM -9V RECT
L902
L903
Q904
EMAERGENCY DETECT
W401
L909 VIO 5V
L907 RP 5V
EVF UNREG
EVF 5V
L910
L908 AU 5V
L911 D 5V
L912 D 4V
CAM 15V
CAM -9V
L904 CAM 5V
CORE 4V
VTR DD ON
CAM DD ON
W401
L302 VIO 5V
R/P 5V
Q151, 152
CURRENT LIMITER
RF DC OUT
CN101
IC005, IC121,
IC151—IC156,
IC158, IC159
AUDIO 5V
IC001 | IC003
VIDEO (2) (REC/PB) AMP
VIDEO (1) (Y/CHROMA) PROCESS
CN403
AUDIO 5V
CN102
EVF 5V
W802
BACK UP VDD
MT 5V
D 5V
D 4V
CAM 15V
CAM -9V
CAM 5V
CORE 4V
(See Page 142)
CN601
MIC 5V
CN602
AUDIO REC/PB PROCESS
IC601-IC604
AU-135P BOARD
CN553
MIC AMP
REMOTE CONTROL RECEIVER
CN554
D 5V
IC551 IC552
(See Page 141)
MA-143P BOARD
JK-3100 BOARD
DC OUT
(See Page 137, 138)
ELECTRIC VIEW FINDER
IC501
CRT DRIVE
CN501
VF-42P BOARD
EVF 5V
(See Page 149)
(See Page 137)
LJ-9P BOARD
J971
REMOTE
LANC DATA
LANC DC
CN951
E, Australian Tourist model
AEP, UK model
POWER VTR OFF CAMERA
POWER PLAYER OFF CAMERA
S001
S018
STANDBY ← LOCK
LITHIUM BATTERY
LI 3V
CN001
CN001
CN002
(See Page 131)
CF-3200 BOARD
D5V
CN997
CN996
S271
MANUAL FOCUS VR
MF-175P BOARD
(See Page 130)
VC-112P BOARD
(See Page 98, 101, 105)
(See Page 91)
CD-84P BOARD
IC875
CN801
-9V
15V
CCD IMAGER
CAM 5V
-9V
15V
V DRIVE
IC804
D 5V
TIMING GENERATOR
IC801
S/H, AGC, SIGNAL SEPARATOR
IC805
L804
A/D, BIAS AMP
IC803
CAM 5V
4V
A/D CONVERTER
IC802
D 5V
FOCUS PREDRIVER
IC706
D 5V
CAM 5V
D/A CONVERTER (EVR)
IC702
3V
D 4V
SYNC GENERATOR
IC704
3V
D 4V
DPD
IC705
3V
4V
D 4V
CORE 4V
CAMERA CORE (CAMERA SIGNAL PROCESS)
IC707
Q707
IC709
CAMERA CONTROL
A VREF
A VDD
VDD
VPP
CAM ON
CN701
CHECK PIN
D5V
CORE 4V
L706
BACK UP VDD
L709
D 4V
L712
Q702
3V REG
D 5V
L711
CAM 5V
L710
CAM -9V
L708
CAM 15V
L705
MT 5V
L703
W402
D 5V
L717
EE PROM (NON-VOLATILE MEMORY)
IC712
IC710
BACK UP VDD
TITLE MEMORY (S-RAM)
IC711
3V
D 4V
D 5V
TITLER
IC851, IC852
CAM 5V
IRIS DRIVE
HALL AMP
HALL BIAS
SENS VCC
FOCUS MOTOR DRIVE
IC853
L852
IC855
MT 5V
ZOOM MOTOR DRIVE
IC854
ZOOM POSITION A/D CONVERTER
LENS BLOCK
FOCUS END FAR SENSOR
ZOOM POSITION ENCODER

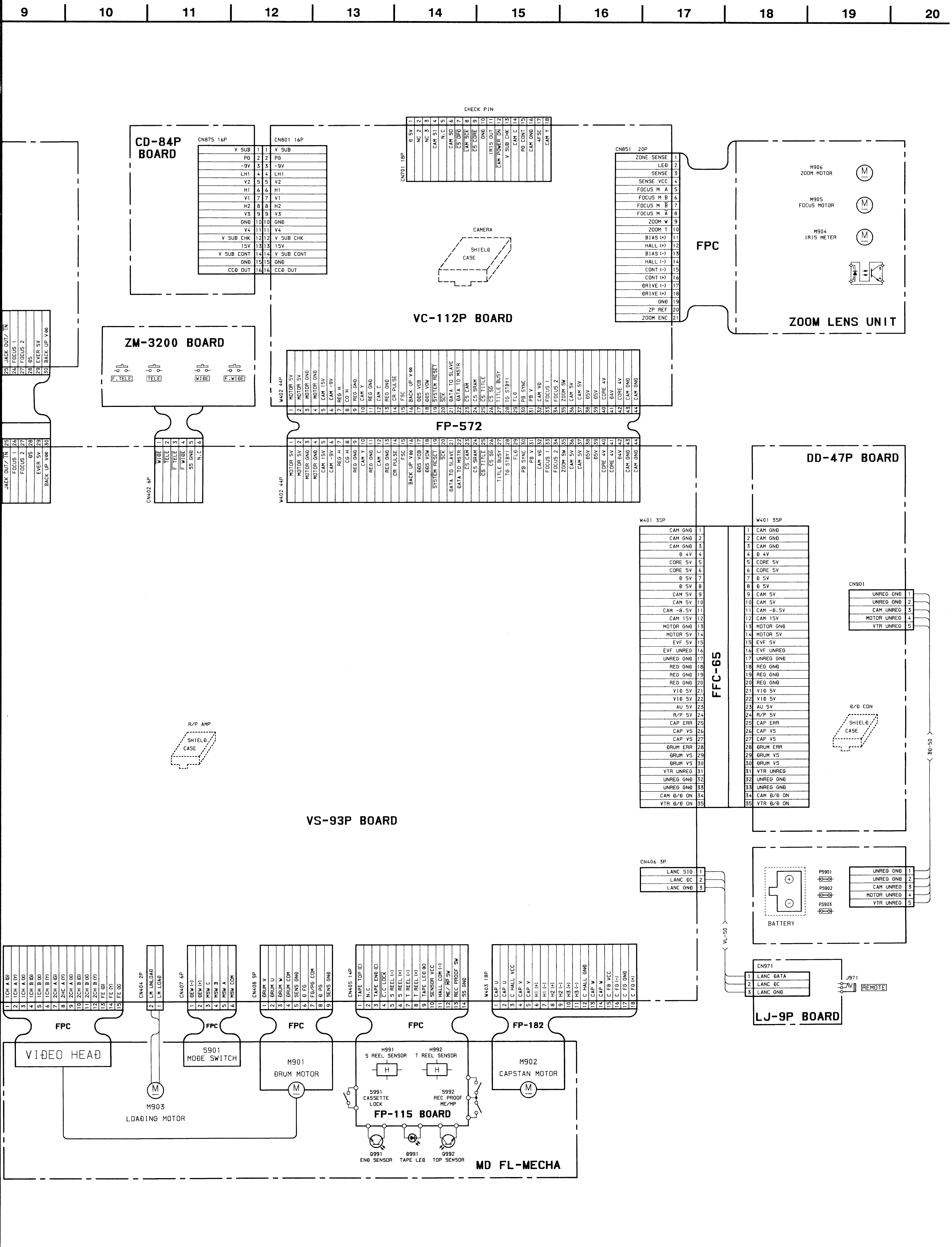
SECTION 4

RINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
MF-175P BOARD
CN996 7P
FADER
D 5V
SIRCS SIG
REG GND
FOCUS 1
FOCUS 2
LENS OPEN
MOLEX
FOCUS MANUAL
FADER
CN997 4P
LENS OPEN
REG GND
SIRCS SIG
D5V
MOLEX
LENS OPEN
CF-3200 BOARD
CN502 20P
KEY IN 6
FOCUS 2
FOCUS 1
REG GND
KEY OUT 2
SIRCS SIG
KEY IN 2
KEY OUT 1
KEY IN 3
KEY OUT 0
KEY IN 5
KEY IN 1
KEY OUT 3
D 5V
KEY IN 0
LI 3V
REG GND
KEY IN 4
KEY OUT 4
KEY OUT 5
LCD PANEL
LCD501 24P
S1
S0
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
COM 3
COM 2
COM 1
COM 0
S3
S2
LC-40P BOARD
W501 30P
VTR UNREG
REG GND
CAM D/D ON
VTR D/D ON
EEPROM CS
TG STBY1
IN/OUT
CS TITLE
CS SRAM
CS CAM
SYSTEM RESET
TALLY
SCK
DATA TO SLAVE
DATA TO MSTR
PB V
LANC PWR ON
TITLE BLSY
VIDEO DA CS
VIDEO CS
VTR COSMO CS
CS SG
STB CRTC
CC LOCK
JACK OUT/IN
FOCUS 1
FOCUS 2
FFC-66
CN-64P BOARD
CN401 30P
V901 PICTURE TUBE
CN501 4P
EVF 5V
EVF GND
EVF OUT
TALLY
VF-42P BOARD
CN102 6P JST L 1.5mm
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY
VIDEO
DC OUT
L
AUDIO
R
1-537-369-11
(E./Australian, Tourist model)
1-537-369-21
(AEP, UK model)
JK-3100 BOARD
CN101 10P 1.0 NON ZIF
VIDEO IN
VIDEO GND
RF DC OUT
DC OUT GND
VIDEO OUT
AUDIO GND
JACK MONO
AUDIO I/O R
AUDIO I/O L
JACK OUT/IN
AU-135P BOARD
CN601 30P
CN403 30P I 0.8
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.7 IR
1.5 DEV
MX REC/PB
1.7 DEV
AUDIO GND
AUDIO GND
AUDIO 5V
FSC
VA PB MODE
AUDIO 5V
CAM/LINE
RF SWP
SP/LP
AUDIO MUTE
MX SEL1
MX ON/OFF
MONO
MX SEL2
LINE MIX
OUT/IN
PB 1.7M DET
MIC MONO
AUDIO I/O R
AUDIO GND
AUDIO I/O L
AUDIO GND
CN602 5P
MIC 5V
MIC L
MIC GND
MIC R
MIC MONO
MA-113
CN002 14P 0.8
N.C
N.C
RF GND
CAP FG
REC 1B
REC 2B
REC 1A
REC 2A
RF SWP
1/2 RF SWP
PB RF CH1
PB RF CH2
RF GND
PB RF OUT
CHECK PIN
CN001 15P
1CH A (G)
1CH A (Y)
1CH A (X)
CN553 5P
MIC 5V
MIC L
MIC GND
MIC R
MIC MONO
J551
EXT MIC
CN554 4P
N.C
SS GND
SIRCS
SS 5V
MIC L
CN551 3P
INT MIC L
N.C
MIC L GND
CN552 3P
INT MIC R
N.C
MIC R GND
MIC R
MA-143P BOARD
09


9
10
11
12
13
14
15
16
17
18
19
20
CD-84P BOARD
CN875 16P
CN801 16P
V SUB
PG
-9V
LH1
V2
H1
V1
H2
V3
GND
V4
V SUB CHK
15V
V SUB CONT
GND
CCD OUT
CHECK PIN
CN701 18P
D 5V
NC 2
NC 3
CAM S1
N.C
CAM SO
CS DPD
LAM SCK
CS CORE
GND
IRIS OUT
CAM POWER ON
V SUB CHK
CAM C
PG CONT
CAM GND
4FSC
CAM Y
CAMERA
SHIELD CASE
VC-112P BOARD
CN851 20P
ZONE SENSE
LED
SENSE
SENSE VCC
FOCUS M A
FOCUS M B
FOCUS M B̄
FOCUS M Ā
ZOOM W
ZOOM T
BIAS (+)
HALL (+)
BIAS (-)
HALL (-)
CONT (-)
CONT (+)
DRIVE (-)
DRIVE (+)
GND
ZP REF
ZOOM ENC
FPC
M906 ZOOM MOTOR
M905 FOCUS MOTOR
M904 IRIS METER
ZOOM LENS UNIT
ZM-3200 BOARD
F.TELE
TELE
WIDE
F.WIDE
JACK OUT/ IN
FOCUS 1
FOCUS 2
D5
EVER 5V
BACK UP VDD
W402 44P
MOTOR 5V
MOTOR GND
CAM 15V
CAM -9V
REG H
CG H
REG GND
CAM Y
CAM C
CR PULSE
FSC
BACK UP VDD
DDS VDB
DDS VDW
SYSTEM RESET
SCK
DATA TO SLAVE
DATA TO MSTR
CS CAM
CS SRAM
CS TITLE
CS SG
TITLE BUSY
TG STBY1
FLD
PB SYNC
PB V
CAM VD
FOCUS 1
FOCUS 2
ZOOM SW
CAM 5V
D5V
CORE 4V
D4V
CAM GND
FP-572
CN402 6P
SS GND
N.C
DD-47P BOARD
W401 35P
CAM GND
D 4V
CORE 5V
D 5V
CAM 5V
CAM -8.5V
CAM 15V
MOTOR GND
MOTOR 5V
EVF 5V
EVF UNREG
UNREG GND
REG GND
VID 5V
AU 5V
R/P 5V
CAP ERR
CAP VS
DRUM ERR
DRUM VS
VTR UNREG
CAM D/D ON
VTR D/D ON
FFC-65
CN901
UNREG GND
CAM UNREG
MOTOR UNREG
VTR UNREG
D/D CON
BD-50
R/P AMP
VS-93P BOARD
CN406 3P
LANC SIG
LANC DC
LANC GND
VL-50
PS901
PS902
PS903
BATTERY
CN971
LANC DATA
J971
REMOTE
LJ-9P BOARD
1CH A (G)
1CH A (Y)
1CH A (X)
1CH B (G)
1CH B (X)
2CH A (G)
2HC A (Y)
2CH A (X)
2CH B (G)
2CH B (X)
2CH B (Y)
FE (G)
FE (Y)
FE (X)
CN404 2P
LM UNLOAD
LM LOAD
CN407 6P
DEW (-)
DEW (+)
MSW C
MSW B
MSW A
MSW COM
CN408 9P
DRUM V
DRUM U
DRUM W
DRUM COM
SENS GND
D FG
FG/PG COM
D PG
SENS GND
CN405 14P
TAPE TOP (C)
N.C
TAPE END (C)
C.C LOCK
S REEL (-)
S REEL (+)
T REEL (-)
T REEL (+)
TAPE LED (K)
SENSOR VCC
HALL COM (-)
ME/ MP SW
REC PROOF SW
SS GND
W403 18P
CAP U
C HALL VCC
CAP V
H1 (-)
H1 (+)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
C HALL GND
CAP W
C FG VCC
C FG (-)
C FG GND
C FG (+)
FPC
FP-182
VIDEO HEAD
S901 MODE SWITCH
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
M903 LOADING MOTOR
H991 S REEL SENSOR
H992 T REEL SENSOR
S991 CASSETTE LOCK
S992 REC PROOF ME/MP
FP-115 BOARD
Q991 END SENSOR
D991 TAPE LED
Q992 TOP SENSOR
MD FL-MECHA

FRAME

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▬ : Pattern from the side which enables seeing.
(The other layers'patterns are not indicated.)
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ● : Through hole.

- **For schematic diagrams.**
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
Chip resistor are 1/10W unless otherwise noted.
kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- ☐ : panel designation.
- △ : internal component.

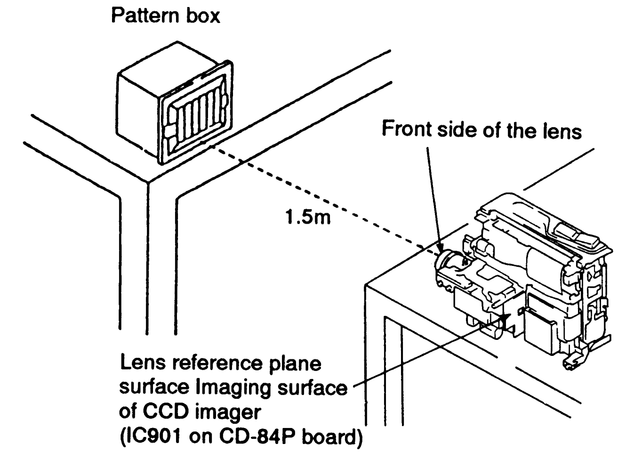
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

• Measuring conditions voltage value and waveform.
(CAMERA, DIGITAL TITLE block)

- The object is color bar chart of pattern box.

1. Connection


Pattern box
Front side of the lens
1.5m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-84P board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

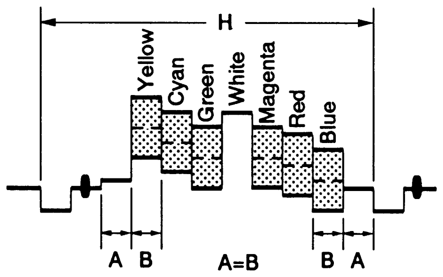

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

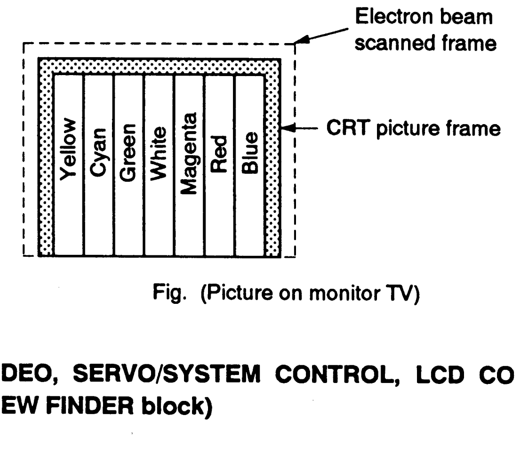

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, LCD CONTROL, VIEW FINDER block)

< DIODE >

D875	8-719-800-76	DIODE	1SS226
D876	8-719-404-46	DIODE	MA110
D877	8-719-820-05	DIODE	1SS181
D878	8-719-404-46	DIODE	MA110

< TRANSISTOR >

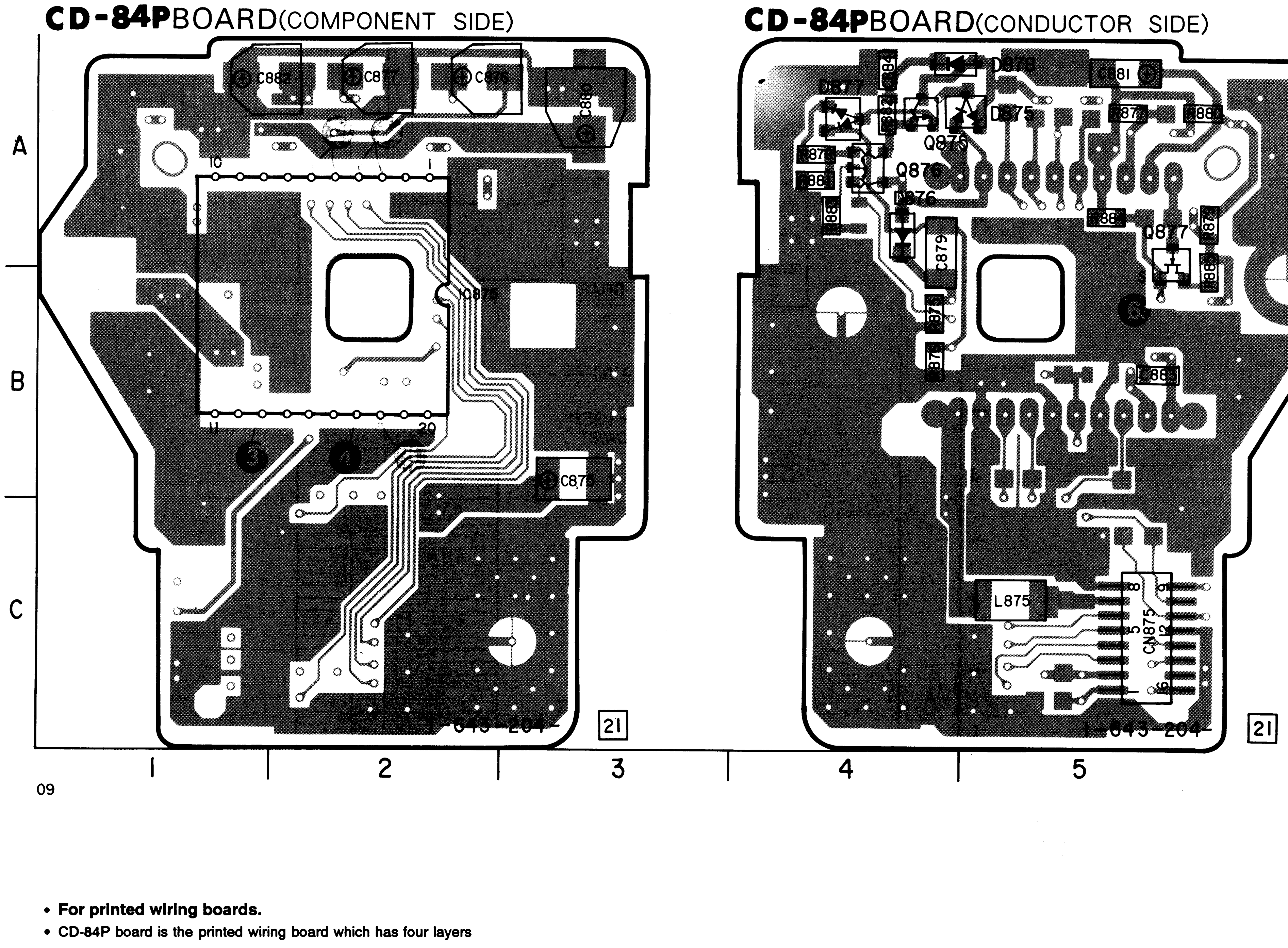
Q875	8-729-927-XX	TRANSISTOR	2SC46
Q876	8-729-927-68	TRANSISTOR	UMW1
Q877	8-729-232-86	TRANSISTOR	2SK18

26
0
81
0
>

2SC4617TL
UMW1
2SK1875

CD-84P (CCD IMAGER) PRINTED WIRING BOARD

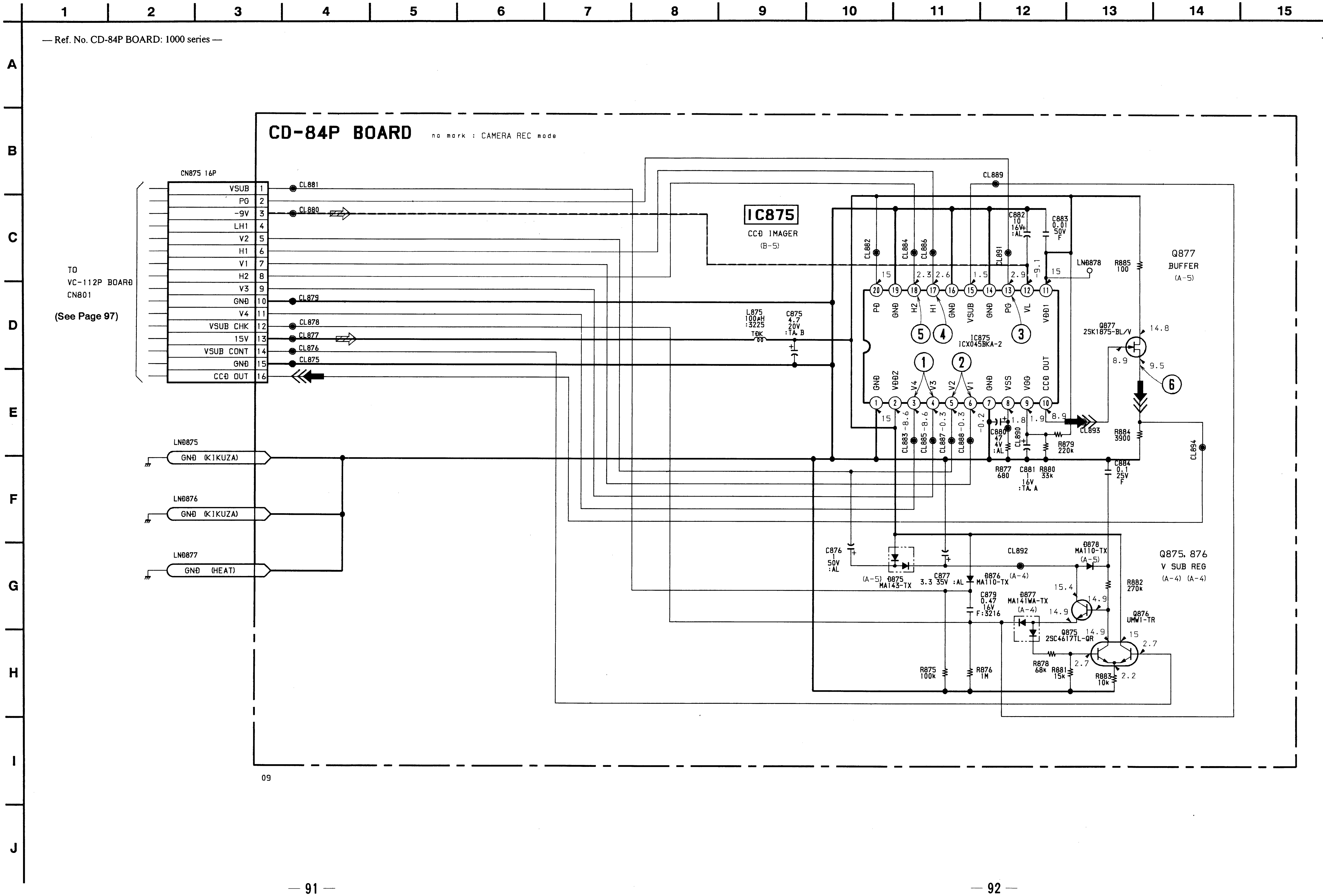
— Ref. No. CD-84P BOARD: 1000 series —


CD-84P BOARD (COMPONENT SIDE)
CD-84P BOARD (CONDUCTOR SIDE)
A
B
C
C882
C877
C876
C880
IC
1
IC875
10
11
20
3
4
C878
1-643-204-
21
D877
C884
D878
C881
D875
Q875
Q876
R877
R880
R878
R881
D876
C879
R884
Q877
R879
R885
6
L875
CN875
8
9
5
12
16
1
2
3
4
5
09

- **For printed wiring boards.**
- CD-84P board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

CD-84P (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-84P BOARD: 1000 series —

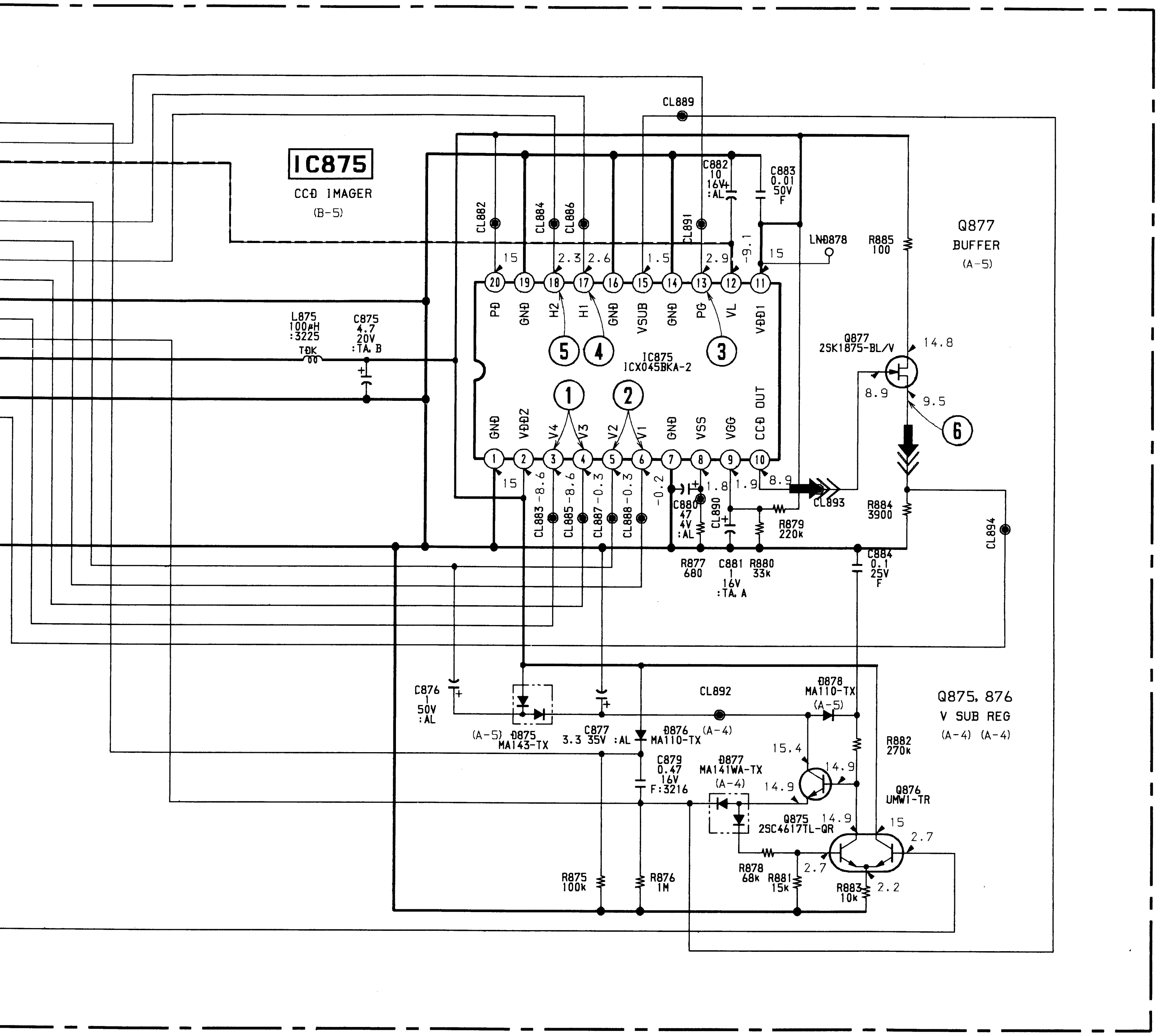

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
CD-84P BOARD
no mark : CAMERA REC mode
CN875 16P
VSUB 1
PG 2
-9V 3
LH1 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
VSUB CHK 12
15V 13
VSUB CONT 14
GND 15
CCD OUT 16
TO
VC-112P BOARD
CN801
(See Page 97)
CL881
CL880
CL879
CL878
CL877
CL876
CL875
LND875
GND (KIKUZA)
LND876
GND (KIKUZA)
LND877
GND (HEAT)
IC875
CCD IMAGER
(B-5)
L875
100μH
:3225
TDK
C875
4.7
20V
:TA, B
CL889
CL882
CL884
CL886
CL891
C882
10
16V
:AL
C883
0.01
50V
F
-9.1
15
2.3
2.6
1.5
2.9
PD
GND
H2
H1
GND
VSUB
GND
PG
VL
VDD1
IC875
ICX045BKA-2
GND
VDD2
V4
V3
V2
V1
GND
VSS
VGG
CCD OUT
①
②
③
④
⑤
⑥
-8.6
-0.3
-0.2
1.8
1.9
8.9
CL883
CL885
CL887
CL888
C880
47
4V
:AL
CL890
R877
680
C881
1
16V
:TA, A
R880
33k
R879
220k
CL893
LND878
R885
100
Q877
BUFFER
(A-5)
Q877
2SK1875-BL/V
14.8
9.5
R884
3900
C884
0.1
25V
F
CL894
C876
1
50V
:AL
(A-5) D875
MA143-TX
C877
3.3 35V :AL
D876
MA110-TX
(A-4)
CL892
D878
MA110-TX
(A-5)
C879
0.47
16V
F:3216
D877
MA141WA-TX
(A-4)
15.4
14.9
R882
270k
Q875, 876
V SUB REG
(A-4) (A-4)
Q876
UMW1-TR
Q875
2SC4617TL-QR
15
2.7
2.2
R875
100k
R876
1M
R878
68k
R881
15k
R883
10k
09

Note on the CC

- Some of this imager (IC901 The correction of the camera and also writte (upper) of the The correctio supplied for imager to whi data label and the camera mi for input meth
- The CCD ima CD-84P board When replacin from the old b
- Perform all ad imager has bee
- Handle the CC may be broken Also, prevent and strong ligh

- **SIGNAL PATH**

	CHROM
REC	
PB	


IC875
CCD IMAGER
(B-5)
IC875
ICX045BKA-2
PD
GND
H2
H1
GND
VSUB
GND
PG
VL
VDD1
GND
VDD2
V4
V3
V2
V1
GND
VSS
VGG
CCD OUT
CL889
CL882
CL884
CL886
CL891
C882 10 16V :AL
C883 0.01 50V F
LND878
R885 100
Q877
BUFFER
(A-5)
Q877
2SK1875-BL/V
14.8
8.9
9.5
L875 100μH :3225 TDK
C875 4.7 20V :TA B
15
2.3
2.6
1.5
2.9
-9.1
15
-8.6
-8.6
-0.3
-0.3
-0.2
1.8
1.9
8.9
CL883
CL885
CL887
CL888
C880 47 4V :AL
CL890
CL893
R884 3900
R879 220k
R877 680
C881 1 16V :TA A
R880 33k
C884 0.1 25V F
CL894
C876 1 50V :AL
(A-5) D875 MA143-TX
C877 3.3 35V :AL
D876 (A-4) MA110-TX
CL892
D878 MA110-TX (A-5)
R882 270k
Q875, 876
V SUB REG
(A-4) (A-4)
15.4
C879 0.47 16V F:3216
D877 MA141WA-TX (A-4)
14.9
14.9
Q876 UMW1-TR
Q875 14.9 2SC4617TL-QR
15
2.7
2.7
2.2
R878 68k
R881 15k
R883 10k
R875 100k
R876 1M
① ② ③ ④ ⑤ ⑥

Note on the CCD Imager replacement

- Some of this units require the correction data by the CCD imager (IC901 on CD-84P board), some do not.

  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC709 on VC-112P board), and also written on the CCD data label put on the shield case (upper) of the DD-47P board.

  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-84P board supplied as the repair parts.

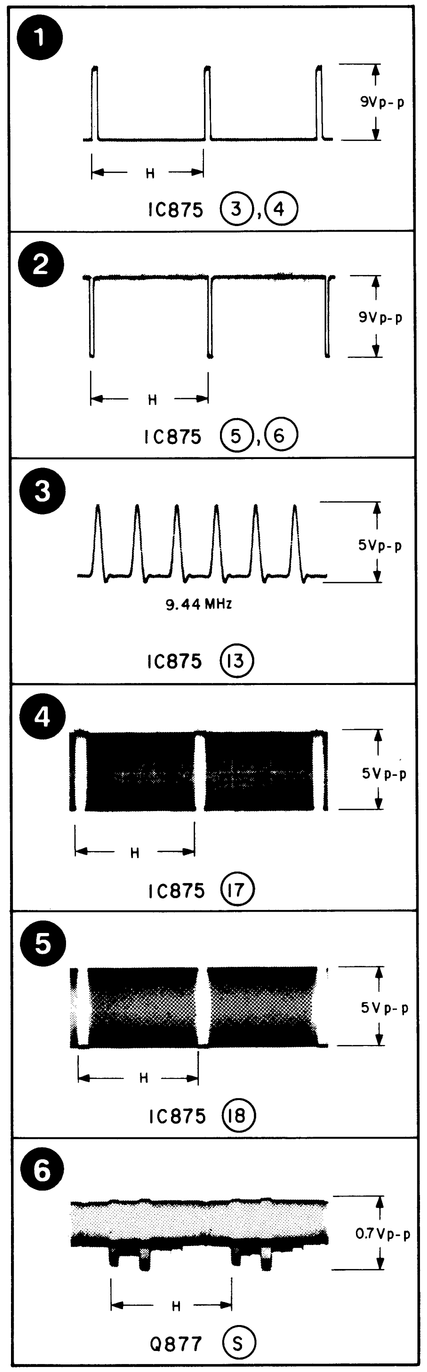
  When replacing the CD-84P board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.

  Also, prevent the receiving light section from dust attached and strong light.

- **SIGNAL PATH**

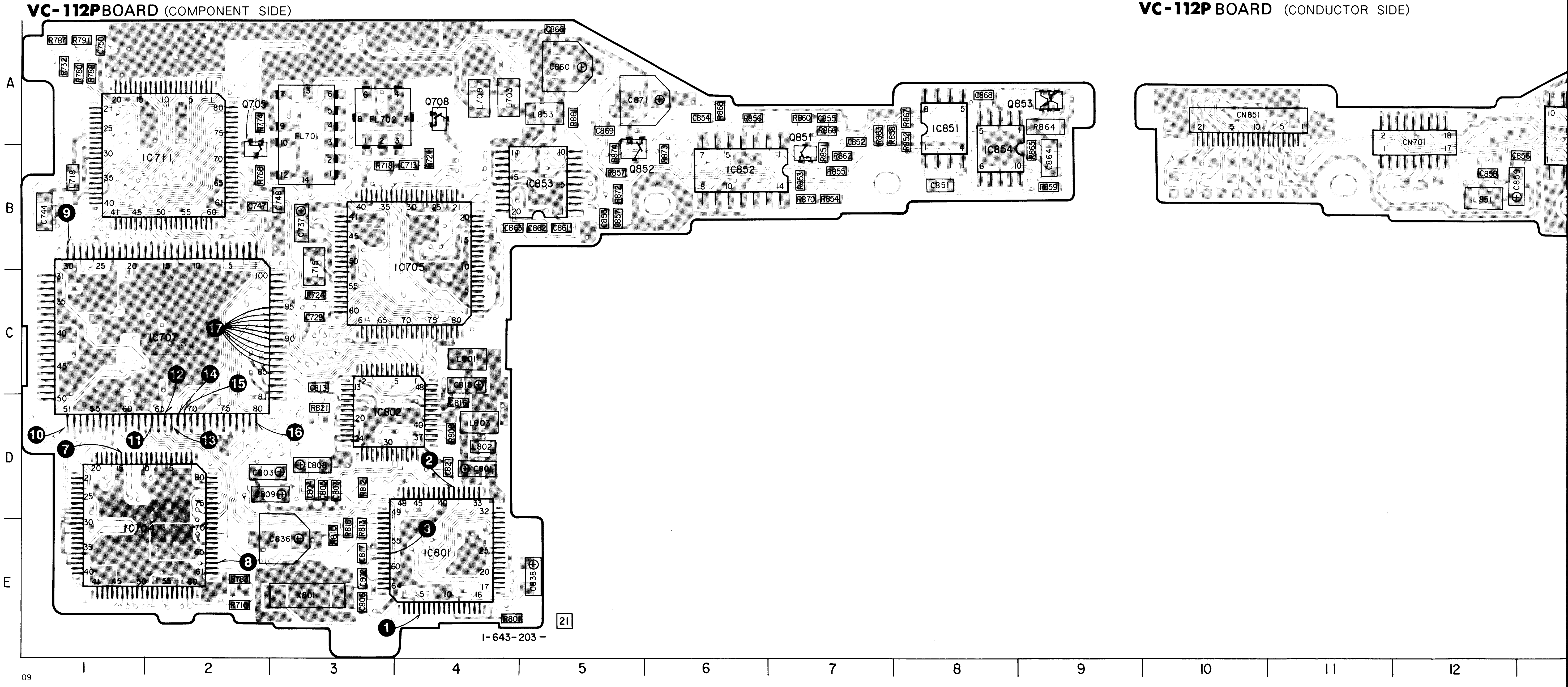
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡»	
PB				

CD-84P BOARD



VC-112P (CAMERA PROCESS, LENS DRIVE) PRINTED WIRING BOARD

— Ref. No. VC-112P BOARD: 2000 series —


VC-112P BOARD (COMPONENT SIDE)

VC-112P BOARD (CONDUCTOR SIDE)

- **For printed wiring boards.**
- VC-112P board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

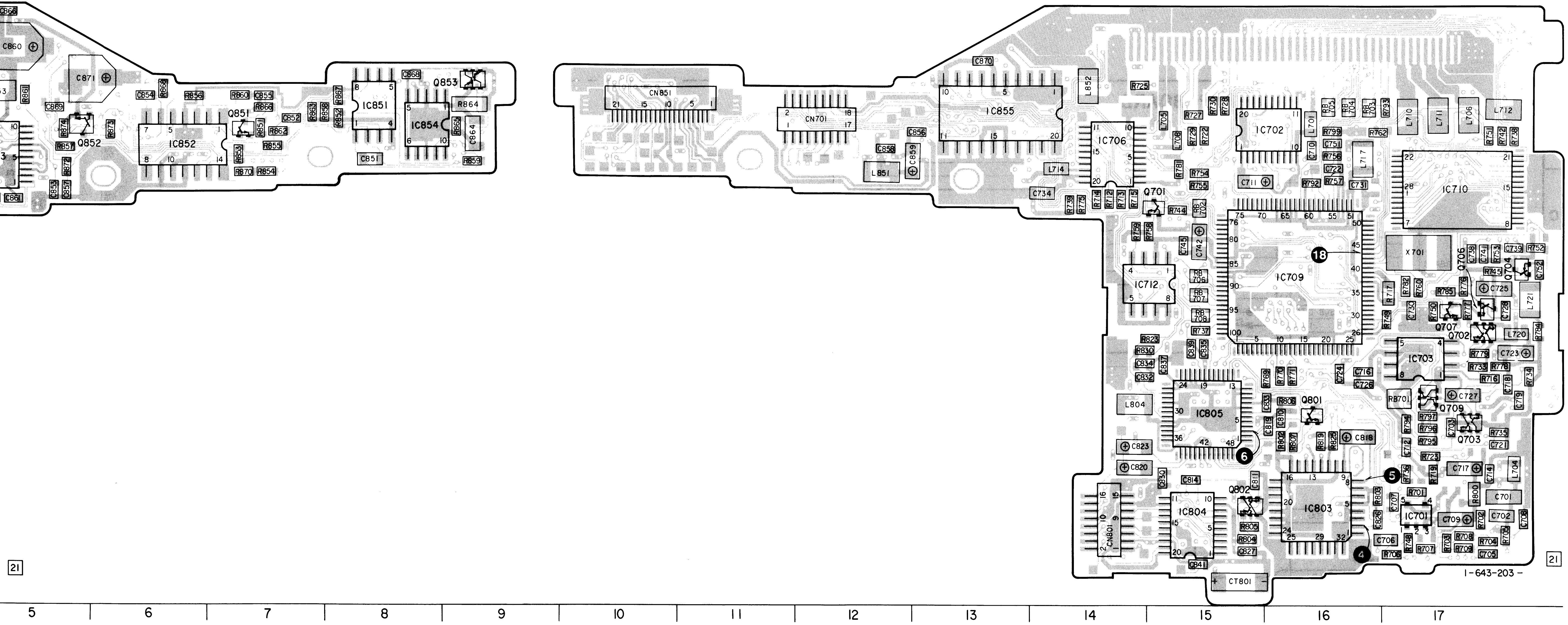
< IC >

IC701	8-759-243-19	IC	TC7SU04F
IC702	8-759-064-36	IC	MB88346BPFV
IC703	8-759-710-07	IC	NJM2234M
IC704	8-752-348-92	IC	CXD2101AR
IC705	8-759-069-19	IC	CXD2103AR
IC706	8-752-337-36	IC	CXD2104N
IC707	8-752-344-53	IC	CXD2100Q
IC709	8-752-834-64	IC	CXP80624-281R
IC710	8-759-519-14	IC	MB8464-15LLPFTN
IC711	8-759-518-81	IC	CXD2112R
IC712	8-759-044-78	IC	AK6420F
IC801	8-752-337-34	IC	CXD1257R
IC802	8-752-056-39	IC	CXA1507BR
IC803	8-752-053-26	IC	CXA1399Q
IC804	8-752-327-48	IC	CXD1250N
IC805	8-752-054-61	IC	CXA1390AR
IC851	8-759-701-24	IC	NJM3414M
IC852	8-759-998-96	IC	LM324D
IC853	8-759-058-47	IC	MPC1724VMEL
IC854	8-759-823-51	IC	LB1830M
IC855	8-759-059-07	IC	LC78865M

< TRANSISTOR >

Q701	8-729-928-87	TRANSISTOR	DTC124EE
Q702	8-729-427-74	TRANSISTOR	XP4601
Q703	8-729-427-74	TRANSISTOR	XP4601
Q704	8-729-928-19	TRANSISTOR	2SA1774R
Q705	8-729-928-81	TRANSISTOR	DTC144EE
Q706	8-729-927-XX	TRANSISTOR	2SC4617TL
Q707	8-729-928-36	TRANSISTOR	DTA114EE
Q708	8-729-927-97	TRANSISTOR	2SC4617TL
Q709	8-729-427-72	TRANSISTOR	XP4501
Q801	8-729-927-XX	TRANSISTOR	2SC4617TL
Q802	8-729-427-70	TRANSISTOR	XP4401
Q851	8-729-927-XX	TRANSISTOR	2SC4617TL
Q852	8-729-907-00	TRANSISTOR	DTC114EU
Q853	8-729-427-70	TRANSISTOR	XP4401

VC-112P BOARD (CONDUCTOR SIDE)


C866
C860
C871
C869
R861
R874
R857
Q852
R873
R872
C853
C857
C861
C854
R868
R856
R860
C855
R866
Q851
R851
R862
R853
R855
R870
R854
IC852
C852
R863
R858
R852
R867
IC851
C868
Q853
IC854
R864
R865
C864
C851
R859
CN851
CN701
IC855
C870
C856
C858
C859
L851
L852
L714
C734
R725
R727
R730
R728
R729
R722
IC706
R705
R708
R781
R754
R755
IC702
L701
C710
C711
R799
C751
R756
C722
R792
R757
C731
RB705
RB704
RB703
R793
R762
L717
L710
L711
L706
L712
R751
R742
R738
IC710
R739
R775
R714
R712
R713
R715
Q701
RB702
R744
R759
R758
C745
C742
IC709
X701
Q706
C738
C741
R753
C739
R752
Q704
R745
C725
R776
R785
L721
IC712
RB706
RB707
RB708
R737
R717
R782
R760
R749
C730
R750
R777
C728
Q707
Q702
L720
R784
R823
R830
C834
C832
C837
C839
C835
IC703
R779
C723
R733
R778
R716
R734
C724
C716
C726
R769
R770
R771
L804
IC805
C833
C836
R806
Q801
RB701
C727
R797
Q709
R796
R794
R795
Q703
R735
C721
C703
C823
C819
C810
R802
R807
R819
R829
C818
C820
C830
C814
C811
Q802
IC804
IC803
C712
R723
R736
R719
C717
C714
L704
CN801
R803
C826
C707
R701
IC701
C709
R800
C701
C702
C708
R805
R804
C827
C841
C706
R748
R706
R707
C703
R708
R709
R702
R704
C705
CT801
1-643-203-
21
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>

TC7SU04F
MB88346BPFV
NJM2234M
CXD2101AR
CXD2103AR

CXD2104N
CXD2100Q
CXP80624-281R
MB8464-15LLPFTN
CXD2112R

IC712	8-759-044-78	IC	AK6420F
IC801	8-752-337-34	IC	CXD1257R
IC802	8-752-056-39	IC	CXA1507BR
IC803	8-752-053-26	IC	CXA1399Q
IC804	8-752-327-48	IC	CXD1250N
IC805	8-752-054-61	IC	CXA1390AR
IC851	8-759-701-24	IC	NJM3414M
IC852	8-759-998-96	IC	LM324D
IC853	8-759-058-47	IC	MPC1724VMEL
IC854	8-759-823-51	IC	LB1830M
IC855	8-759-059-07	IC	LC78865M

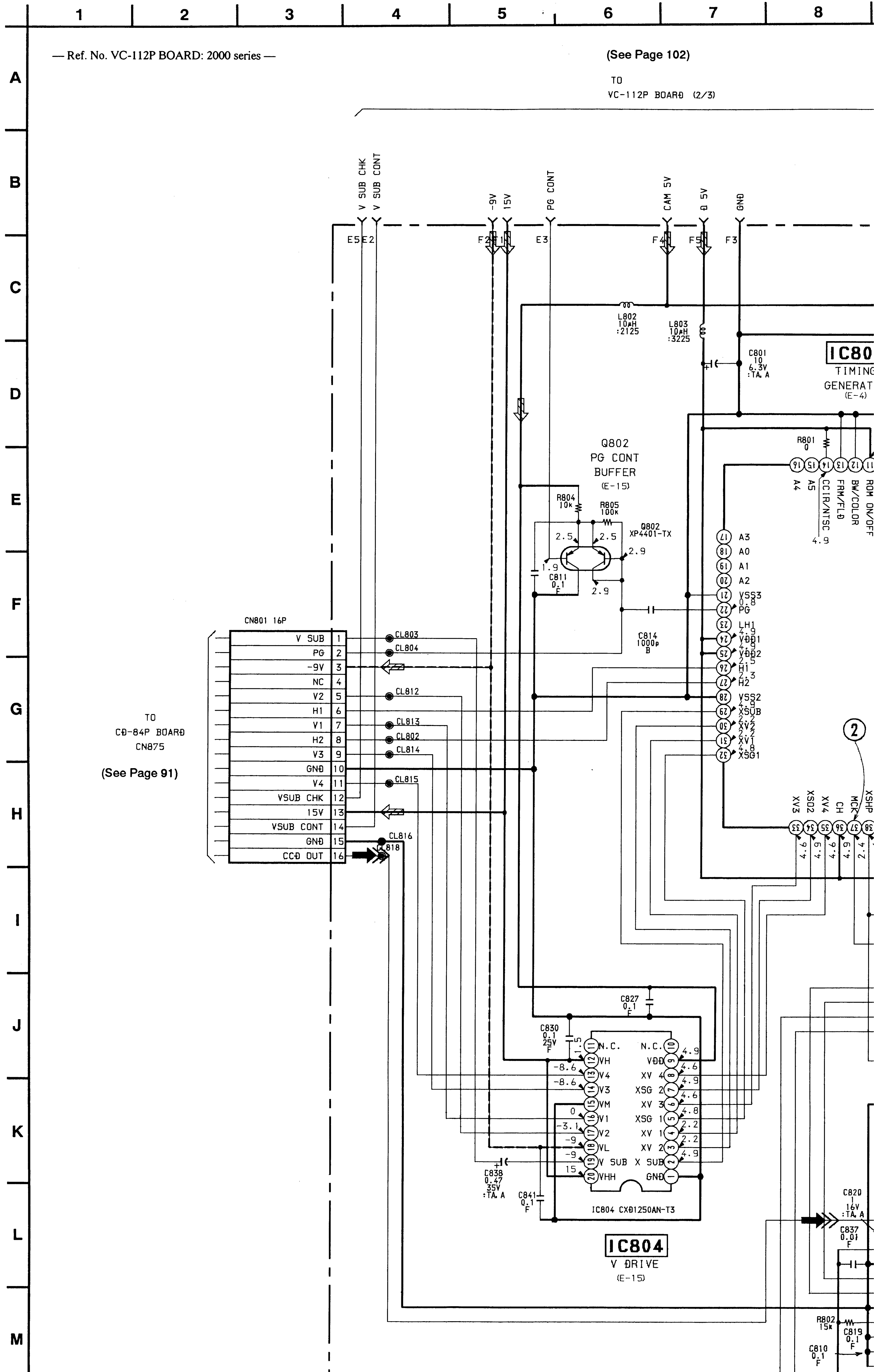
< TRANSISTOR >

Q701	8-729-928-87	TRANSISTOR	DTC124EE
Q702	8-729-427-74	TRANSISTOR	XP4601
Q703	8-729-427-74	TRANSISTOR	XP4601
Q704	8-729-928-19	TRANSISTOR	2SA1774R
Q705	8-729-928-81	TRANSISTOR	DTC144EE
Q706	8-729-927-XX	TRANSISTOR	2SC4617TL
Q707	8-729-928-36	TRANSISTOR	DTA114EE
Q708	8-729-927-97	TRANSISTOR	2SC4617TL
Q709	8-729-427-72	TRANSISTOR	XP4501
Q801	8-729-927-XX	TRANSISTOR	2SC4617TL
Q802	8-729-427-70	TRANSISTOR	XP4401
Q851	8-729-927-XX	TRANSISTOR	2SC4617TL
Q852	8-729-907-00	TRANSISTOR	DTC114EU
Q853	8-729-427-70	TRANSISTOR	XP4401

VC-112P (CAMERA PROCESS) SCHEMATIC DIAGRAM

• Refer to [illegible] 4 for Printed Wiring Board.

— Ref. No. VC-112P BOARD: 2000 series —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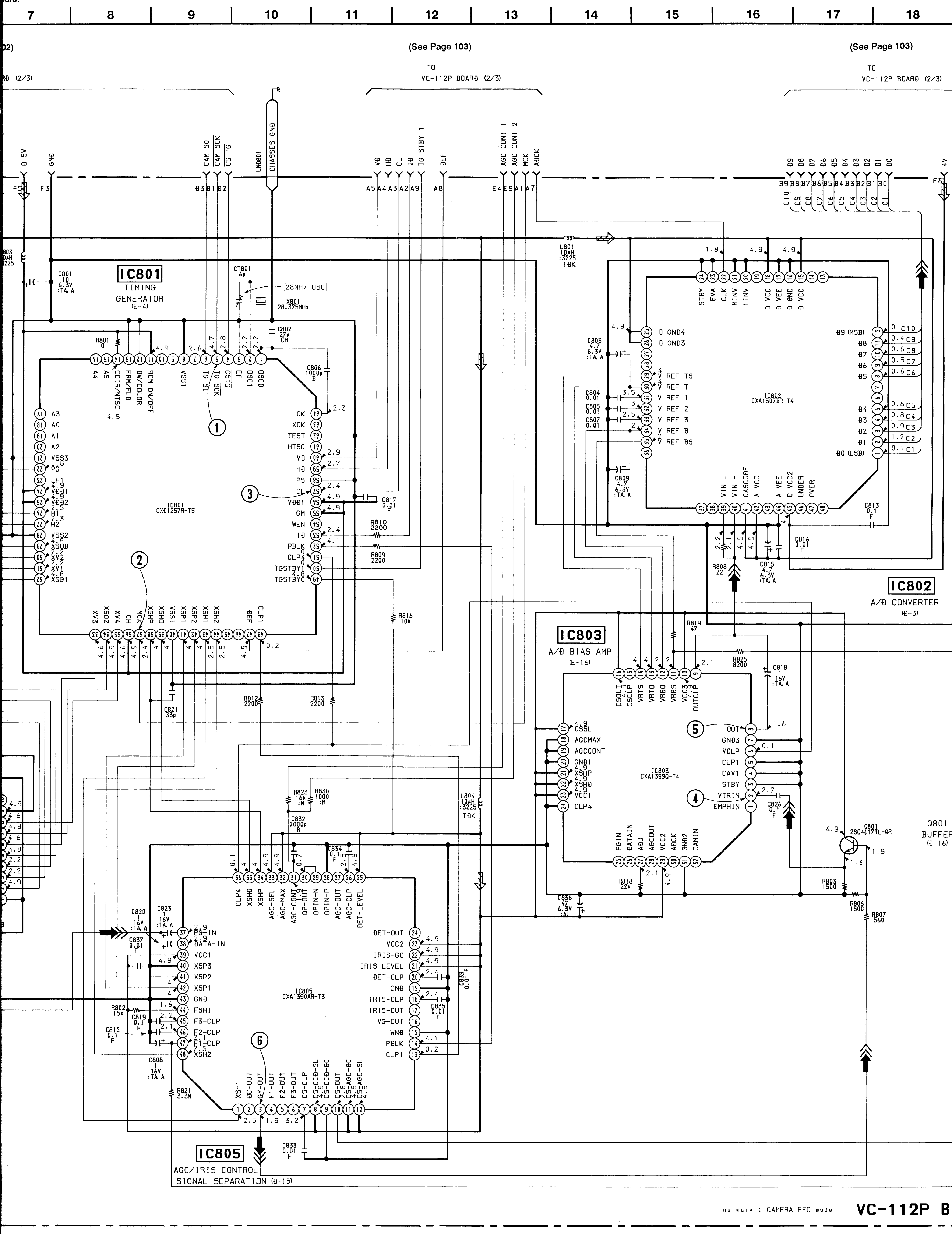
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
(See Page 102)
TO
VC-112P BOARD (2/3)
V SUB CHK
V SUB CONT
-9V
15V
PG CONT
CAM 5V
D 5V
GND
E5
E2
F2
F1
E3
F4
F5
F3
L802
10μH
:2125
L803
10μH
:3225
C801
10
6.3V
:TA A
IC80
TIMING
GENERAT
(E-4)
Q802
PG CONT
BUFFER
(E-15)
R801
0
R804
10k
R805
100k
Q802
XP4401-TX
2.5
2.5
2.9
1.9
C811
0.1
F
2.9
C814
1000p
B
A4
A5
CCIR/NTSC
FRM/FLD
BW/COLOR
ROM ON/OFF
4.9
A3
A0
A1
A2
VSS3
0.8
PG
LH1
4.9
VDD1
4.9
VDD2
2.5
H1
2.3
H2
VSS2
4.9
XSUB
2.2
XV2
2.2
XV1
4.8
XSG1
2
XV3
XSG2
XV4
CH
MCK
XSHP
4.9
4.9
4.9
4.9
2.2
CN801 16P
V SUB 1
PG 2
-9V 3
NC 4
V2 5
H1 6
V1 7
H2 8
V3 9
GND 10
V4 11
VSUB CHK 12
15V 13
VSUB CONT 14
GND 15
CCD OUT 16
CL803
CL804
CL812
CL813
CL802
CL814
CL815
CL816
CL818
TO
CD-84P BOARD
CN875
(See Page 91)
C827
0.1
F
C830
0.1
25V
F
1.5
N.C.
VH
V4
V3
VM
V1
V2
VL
V SUB
VHH
N.C.
VDD
XV 4
XSG 2
XV 3
XSG 1
XV 1
XV 2
X SUB
GND
-8.6
-8.6
0
-3.1
-9
-9
15
4.9
4.6
4.9
4.6
4.8
2.2
2.2
4.9
C838
0.47
35V
:TA A
C841
0.1
F
IC804 CXD1250AN-T3
IC804
V DRIVE
(E-15)
C820
1
16V
:TA A
C837
0.01
F
R802
15k
C819
0.1
F
C810
0.1
F
09

ard.


7
8
9
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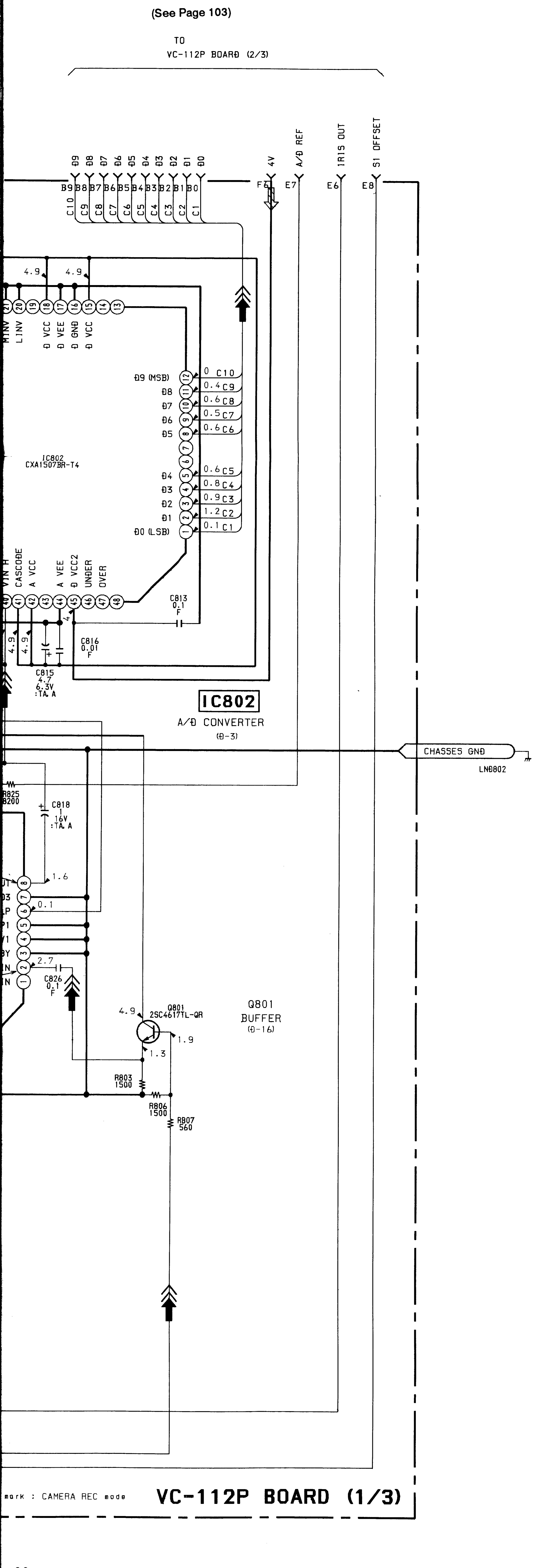
11
12
13
14
15
16
17
18
(See Page 103)
TO
VC-112P BOARD (2/3)
(See Page 103)
TO
VC-112P BOARD (2/3)
IC801
TIMING
GENERATOR
(E-4)
IC801
CXD1257R-T5
CT801
6p
28MHz OSC
X801
28.375MHz
C802
27p
CH
C806
1000p
B
C801
10
6.3V
:TA A
R801
0
CAM SO
CAM SCK
CS TG
LND801
CHASSES GND
VD
HD
CL
ID
TG STBY 1
DEF
AGC CONT 1
AGC CONT 2
MCK
ADCK
D 5V
GND
F5
F3
D3
D1
D2
A5
A4
A3
A2
A9
A8
E4
E9
A1
A7
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
4V
B9
B8
B7
B6
B5
B4
B3
B2
B1
B0
C10
C9
C8
C7
C6
C5
C4
C3
C2
C1
L801
10μH
:3225
TDK
C817
0.01
F
R810
2200
R809
2200
R816
10k
C821
33p
R812
2200
R813
2200
IC802
A/D CONVERTER
(D-3)
IC802
CXA1507BR-T4
C803
4.7
6.3V
:TA A
C804
0.01
C805
0.01
C807
0.01
C809
4.7
6.3V
:TA A
C813
0.1
F
C816
0.01
F
C815
4.7
6.3V
:TA A
R808
22
R819
47
IC803
A/D BIAS AMP
(E-16)
IC803
CXA1399Q-T4
R825
8200
C818
1
16V
:TA A
C826
0.1
F
R818
22k
C836
47
6.3V
:AL
Q801
2SC4617TL-QR
Q801
BUFFER
(D-16)
R803
1500
R806
1500
R807
560
L804
10μH
:3225
TDK
R823
16k
:M
R830
1000
:M
C832
1000p
B
C834
0.1
F
IC805
CXA1390AR-T3
C820
1
16V
:TA A
C823
1
16V
:TA A
C837
0.01
F
R802
15k
C819
0.1
F
C810
0.1
F
C808
1
16V
:TA A
R821
3.3M
C839
0.01
F
C835
0.01
F
C833
0.01
F
IC805
AGC/IRIS CONTROL
SIGNAL SEPARATION (D-15)
①
②
③
④
⑤
⑥

no mark : CAMERA REC mode

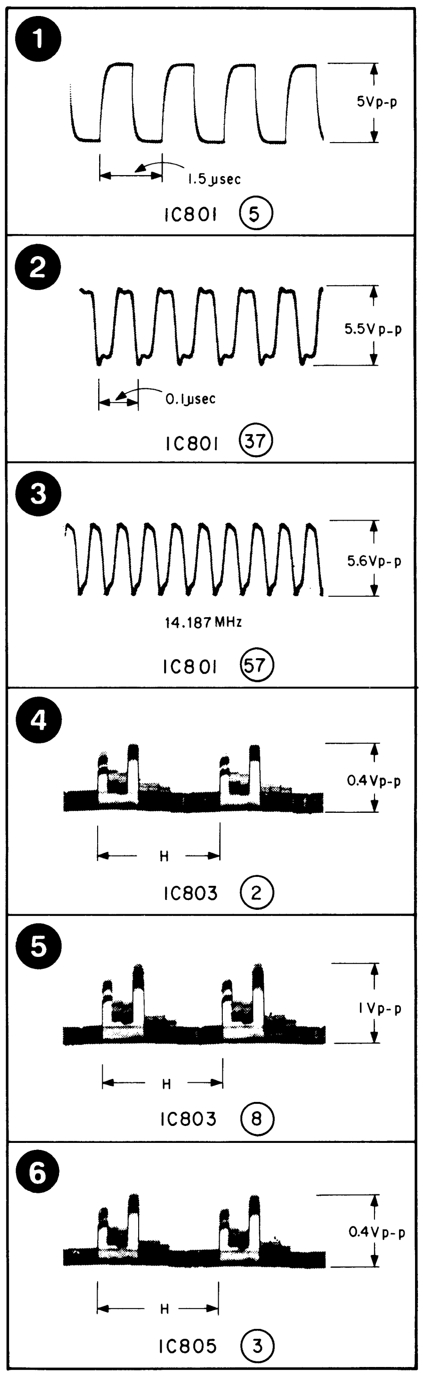
VC-112P B


(See Page 103)
TO
VC-112P BOARD (2/3)
D9 D8 D7 D6 D5 D4 D3 D2 D1 D0
4V
A/D REF
IRIS OUT
S1 OFFSET
B9 B8 B7 B6 B5 B4 B3 B2 B1 B0
F7 E7 E6 E8
C10 C9 C8 C7 C6 C5 C4 C3 C2 C1
4.9
MINV LINV D VCC D VEE D GND D VCC
D9 (MSB) D8 D7 D6 D5 D4 D3 D2 D1 D0 (LSB)
0 C10
0.4 C9
0.6 C8
0.5 C7
0.6 C6
0.6 C5
0.8 C4
0.9 C3
1.2 C2
0.1 C1
IC802
CXA1507BR-T4
VIN H CASCODE A VCC A VEE D VCC2 UNDER OVER
C813 0.1 F
C816 0.01 F
C815 4.7 6.3V :TA A
IC802
A/D CONVERTER
(B-3)
CHASSES GND
LN8802
R825 8200
C818 1 16V :TA A
1.6
0.1
2.7
C826 0.1 F
Q801
2SC4617TL-QR
4.9
1.9
1.3
Q801
BUFFER
(B-16)
R803 1500
R806 1500
R807 560
mark : CAMERA REC mode
VC-112P BOARD (1/3)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	
PB				

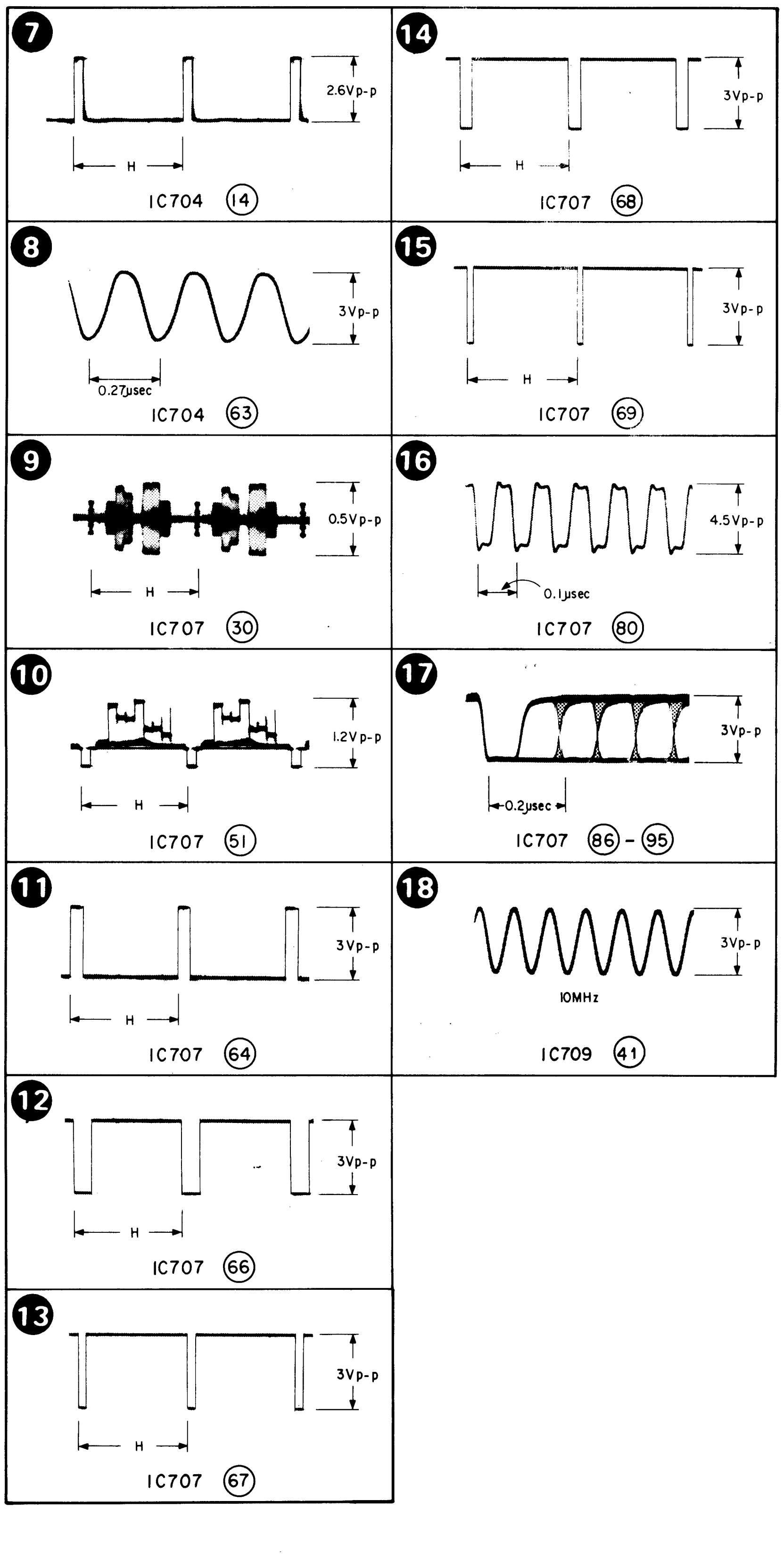
VC-112P BOARD (1/3)



- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	
PB				

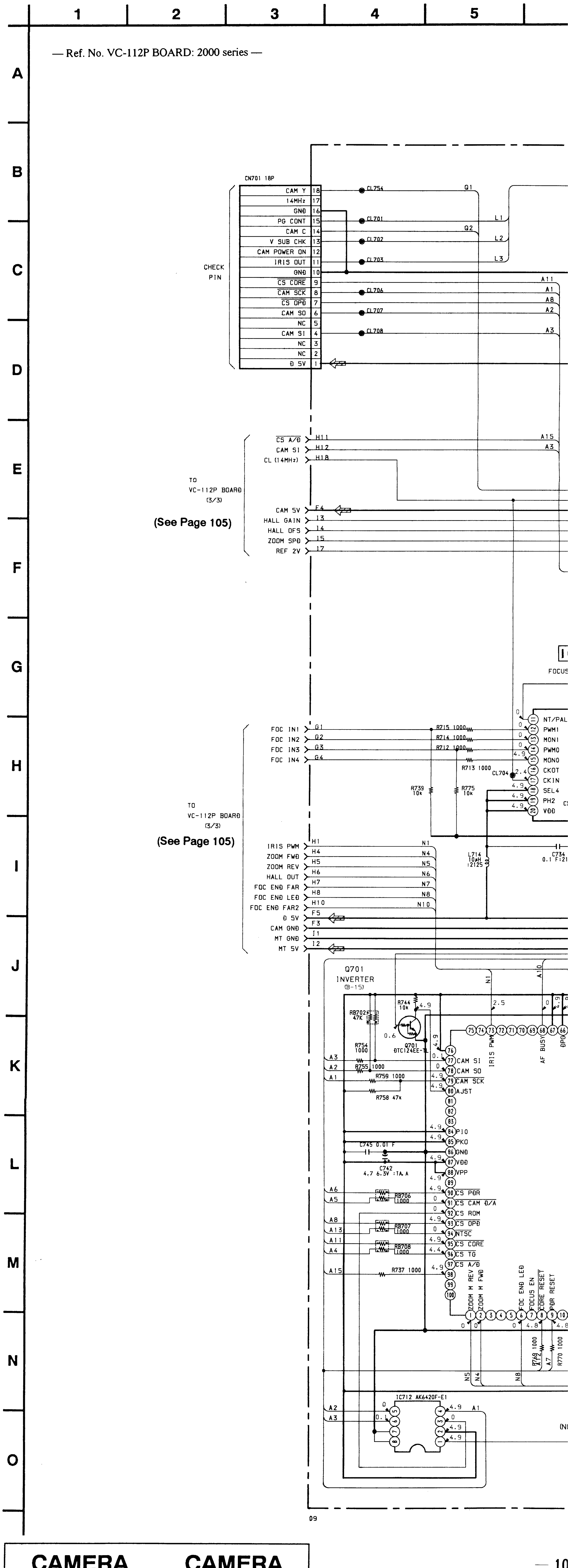
VC-112P BOARD (2/3)



7
2.6Vp-p
H
IC704 (14)
14
3Vp-p
H
IC707 (68)
8
3Vp-p
0.27μsec
IC704 (63)
15
3Vp-p
H
IC707 (69)
9
0.5Vp-p
H
IC707 (30)
16
4.5Vp-p
0.1μsec
IC707 (80)
10
1.2Vp-p
H
IC707 (51)
17
3Vp-p
0.2μsec
IC707 (86)-(95)
11
3Vp-p
H
IC707 (64)
18
3Vp-p
10MHz
IC709 (41)
12
3Vp-p
H
IC707 (66)
13
3Vp-p
H
IC707 (67)

VC-112P (CAMERA PROCESS) SCHEMATIC DIAGRAM

• Refer to page **94** for Prin



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A
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C
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F
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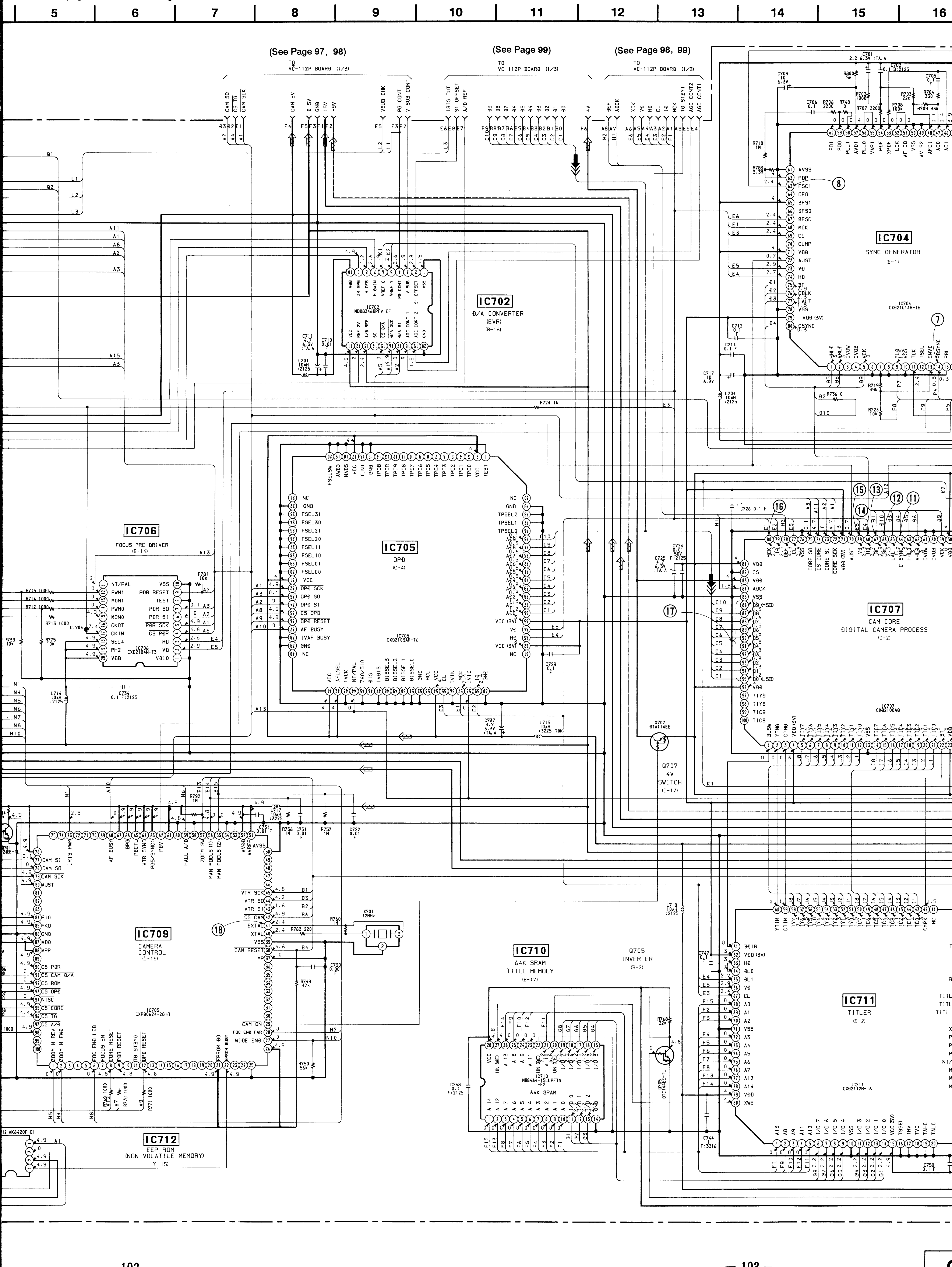
J
K
L
M
N
O
— Ref. No. VC-112P BOARD: 2000 series —
CN701 18P
CAM Y
14MHz
GND
PG CONT
CAM C
V SUB CHK
CAM POWER ON
IRIS OUT
GND
CS CORE
CAM SCK
CS OPD
CAM SO
NC
CAM SI
NC
NC
D 5V
CHECK PIN
CL754
CL701
CL702
CL703
CL706
CL707
CL708
Q1
Q2
L1
L2
L3
A11
A1
A8
A2
A3
A15
CS A/D
CAM SI
CL (14MHz)
H11
H12
H18
TO VC-112P BOARD (3/3)
(See Page 105)
CAM 5V
HALL GAIN
HALL OFS
ZOOM SPD
REF 2V
F4
13
14
15
17
FOCUS
FOC IN1
FOC IN2
FOC IN3
FOC IN4
G1
G2
G3
G4
R715 1000
R714 1000
R712 1000
R713 1000
CL704
R739 10k
R775 10k
NT/PAL
PWM1
MON1
PWM0
MON0
CKOT
CKIN
SEL4
PH2
VDD
IRIS PWM
ZOOM FWD
ZOOM REV
HALL OUT
FOC END FAR
FOC END LED
FOC END FAR2
D 5V
CAM GND
MT GND
MT 5V
H1
H4
H5
H6
H7
H8
H10
F5
F3
J1
J2
N1
N4
N5
N6
N7
N8
N10
L714 10μH
C734 0.1
Q701 INVERTER
R744 10k
RB702 47K
R754 1000
R755 1000
R759 1000
R758 47k
Q701 DTC124EE
CAM SI
CAM SO
CAM SCK
AJST
P10
PKO
GND
VDD
VPP
CS POR
CS CAM D/A
CS ROM
CS OPD
NTSC
CS CORE
CS TG
CS A/D
C745 0.01 F
C742 4.7 6.3V TA A
RB706 1000
RB707 1000
RB708 1000
R737 1000
A6
A5
A8
A13
A11
A4
A15
IRIS PWM
AF BUSY
ZOOM M REV
ZOOM M FWD
FOC END LED
FOCUS EN
CORE RESET
POR RESET
R769 1000
R770 1000
A7
N5
N4
N8
IC712 AK6420F-E1
A1
A2
A3
09

• Refer to page 94 for Printed Wiring Board.



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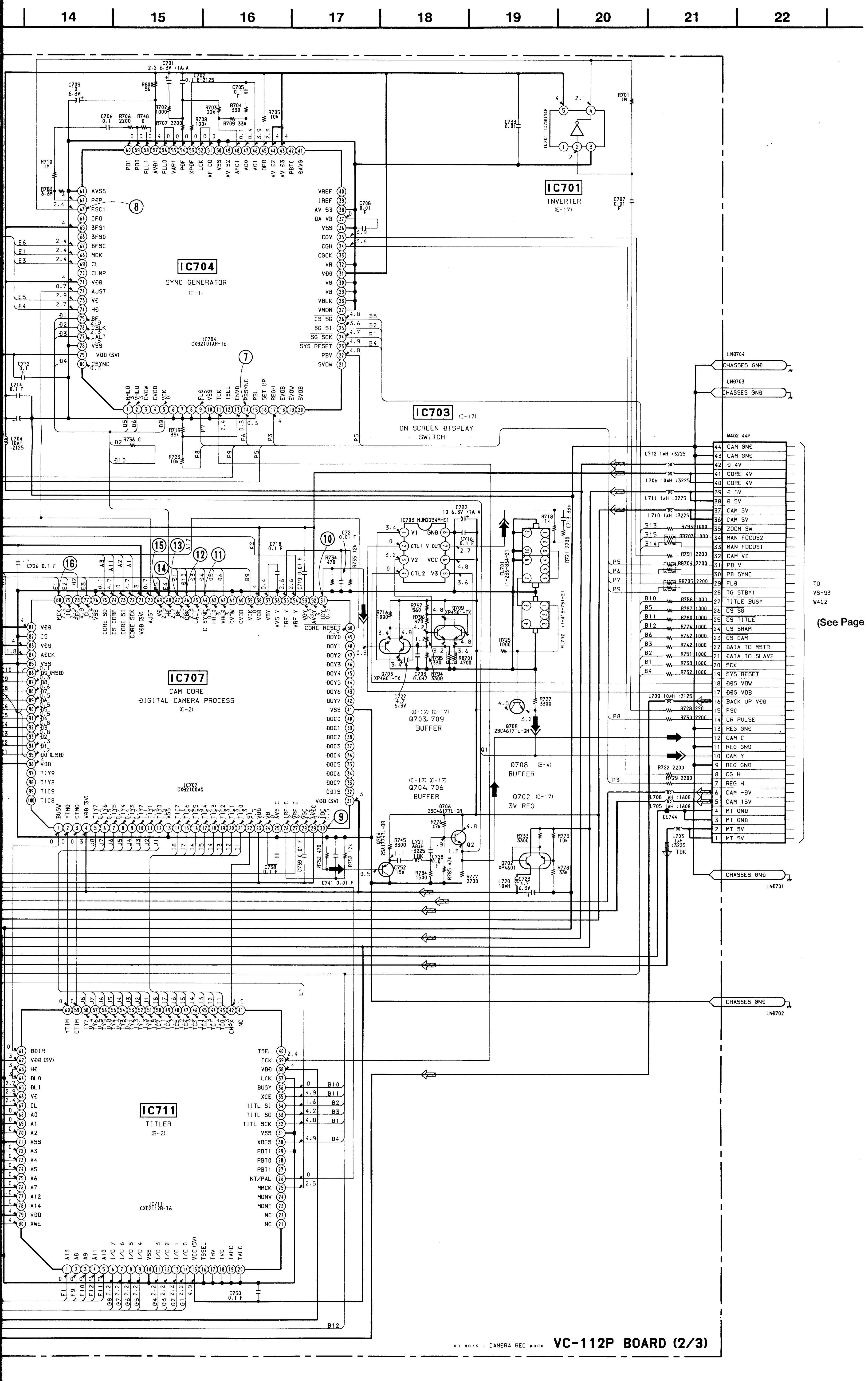
16
(See Page 97, 98)
TO VC-112P BOARD (1/3)
(See Page 99)
TO VC-112P BOARD (1/3)
(See Page 98, 99)
TO VC-112P BOARD (1/3)
IC702
D/A CONVERTER
(EVR)
(B-16)
IC702 MB88346BPFV-EF
IC704
SYNC GENERATOR
(E-1)
IC704 CXD2101AR-T6
IC705
OPD
(C-4)
IC705 CXD2103AR-T6
IC706
FOCUS PRE DRIVER
(B-14)
IC706 CXD2104N-T3
IC707
CAM CORE
DIGITAL CAMERA PROCESS
(C-2)
IC707 CXD2100AQ
Q707 DTA114EE
Q707
4V
SWITCH
(C-17)
IC709
CAMERA
CONTROL
(C-16)
IC709 CXP80624-281R
X701 12MHz
IC710
64K SRAM
TITLE MEMOLY
(B-17)
IC710 MB8464-15LLPFTN-E2
64K SRAM
Q705
INVERTER
(B-2)
Q705 DTC144EE-TL
IC711
TITLER
(B-2)
IC711 CXD2112R-T6
IC712
EEP ROM
(NON-VOLATILE MEMORY)
(C-15)
IC712 AK6420F-E1


14
15
16
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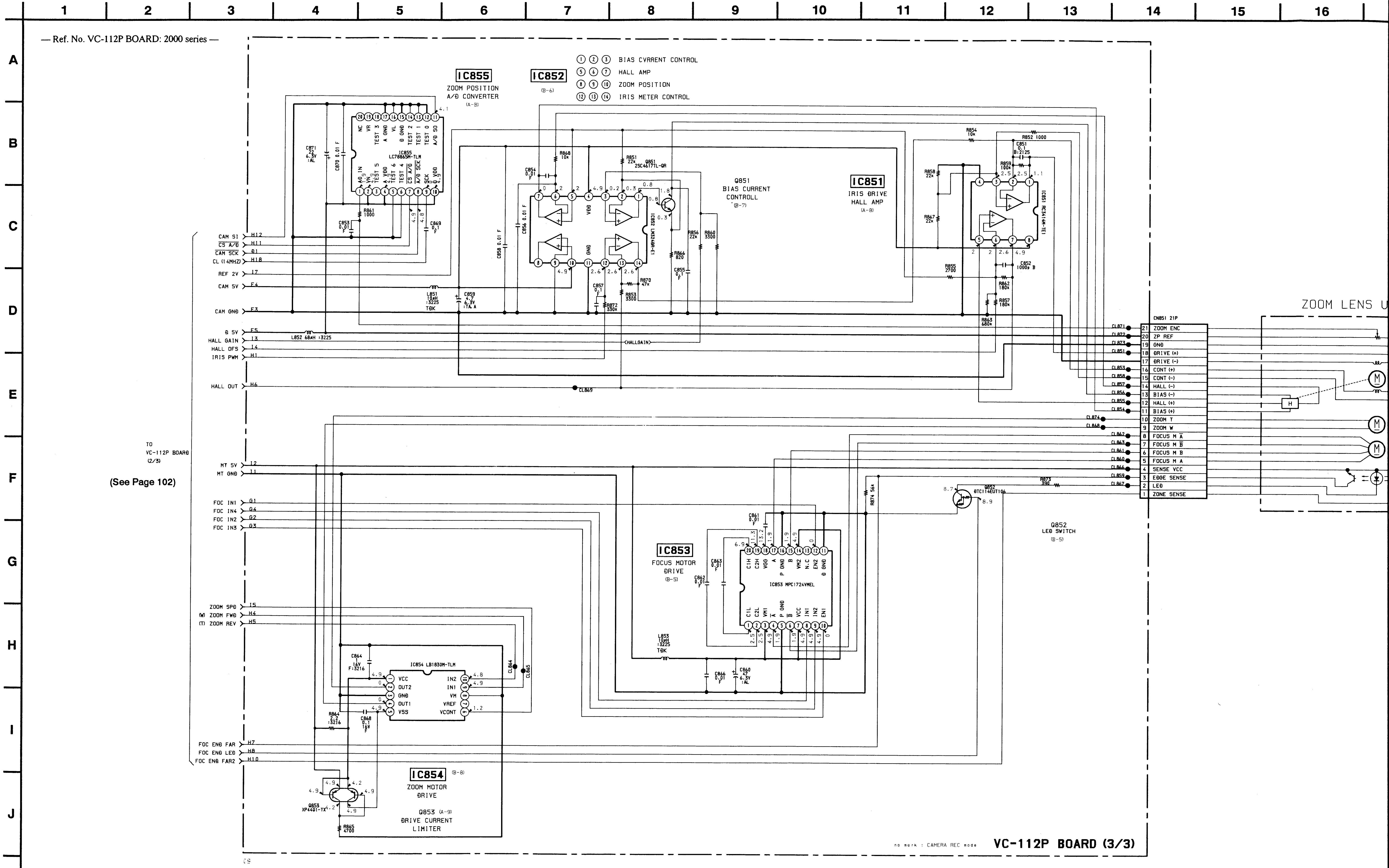
IC704
SYNC GENERATOR
(E-1)
IC704
CXD2101AR-T6
IC701
INVERTER
(E-17)
IC701 TC7SU04F
IC703
ON SCREEN DISPLAY SWITCH
(C-17)
IC703 NJM2234M-E1
IC707
CAM CORE
DIGITAL CAMERA PROCESS
(C-2)
IC707
CXD2100AQ
IC711
TITLER
(B-2)
IC711
CXD2112R-T6
Q703, 709
BUFFER
(D-17) (D-17)
Q703 XP4601-TX
Q709 XP4501-TX
Q704, 706
BUFFER
(C-17) (C-17)
Q704 2SA1774TL-QR
Q706 2SC4617TL-QR
Q708
BUFFER
(B-4)
Q708 2SC4617TL-QR
Q702
3V REG
(C-17)
Q702 XP4601
FL701 1-236-834-21
FL702 1-415-751-21
LN0704
CHASSES GND
LN0703
CHASSES GND
LN0701
CHASSES GND
LN0702
CHASSES GND
W402 44P
44 CAM GND
43 CAM GND
42 D 4V
41 CORE 4V
40 CORE 4V
39 D 5V
38 D 5V
37 CAM 5V
36 CAM 5V
35 ZOOM SW
34 MAN FOCUS2
33 MAN FOCUS1
32 CAM VD
31 PB V
30 PB SYNC
29 FLD
28 TG STBY1
27 TITLE BUSY
26 CS SG
25 CS TITLE
24 CS SRAM
23 CS CAM
22 DATA TO MSTR
21 DATA TO SLAVE
20 SCK
19 SYS RESET
18 DDS VOW
17 DDS VOB
16 BACK UP VDD
15 FSC
14 CR PULSE
13 REG GND
12 CAM C
11 REG GND
10 CAM Y
9 REG GND
8 CG H
7 REG H
6 CAM -9V
5 CAM 15V
4 MT GND
3 MT GND
2 MT 5V
1 MT 5V
TO
VS-93
W402
(See Page 120, 121)
no mark : CAMERA REC mode

VC-112P BOARD (2/3)

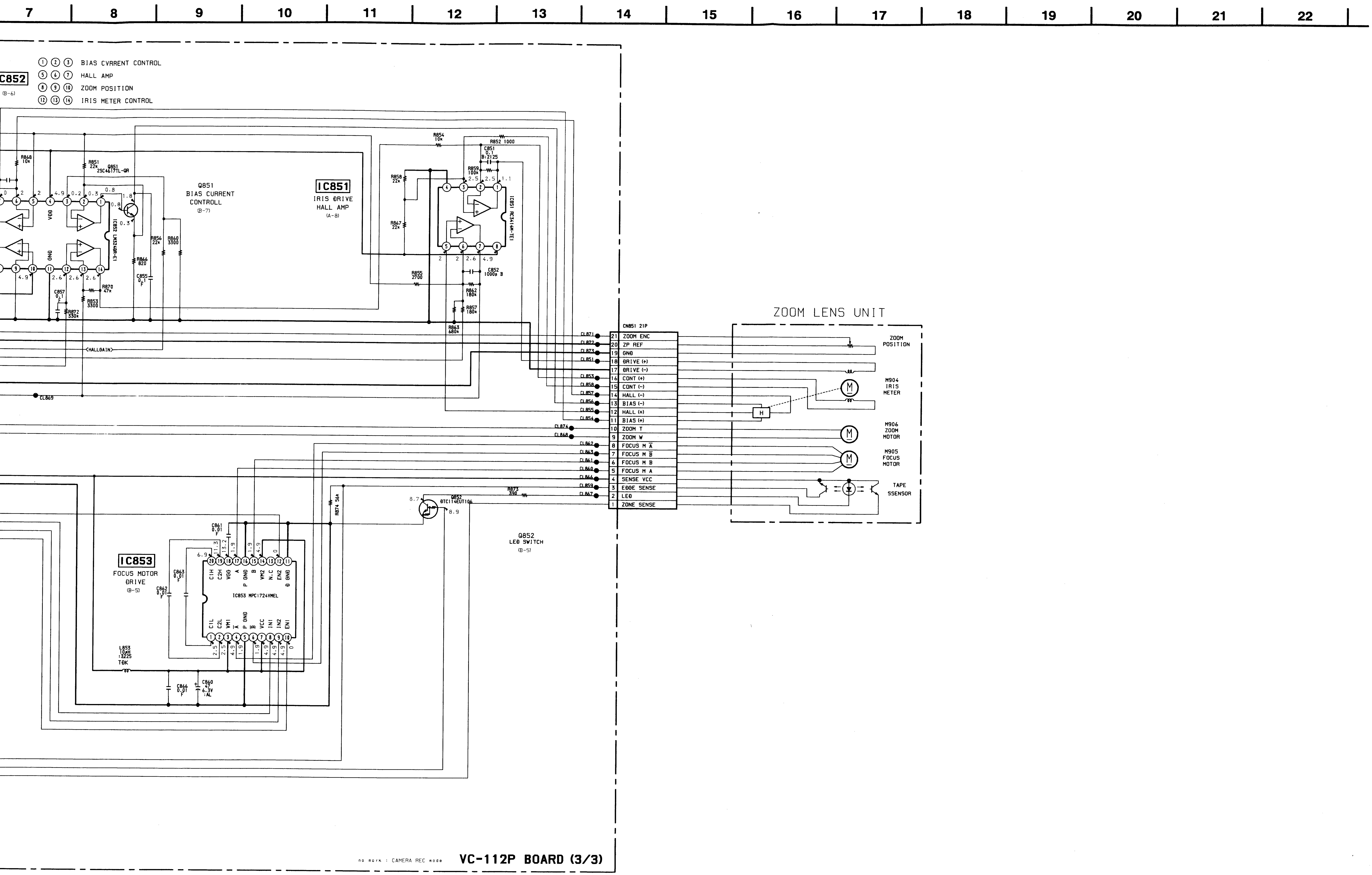
VC-112P (LENS DRIVE) SCHEMATIC DIAGRAM

- Refer to page 94 for Printed Wiring Board.

— Ref. No. VC-112P BOARD: 2000 series —



① ② ③ BIAS CURRENT CONTROL
⑤ ⑥ ⑦ HALL AMP
⑧ ⑨ ⑩ ZOOM POSITION
⑫ ⑬ ⑭ IRIS METER CONTROL
IC855 ZOOM POSITION A/D CONVERTER (A-8)
IC855 LC78865M-TLM
IC852 (B-6)
IC852 LM324DR-E1
Q851 BIAS CURRENT CONTROLL (B-7)
Q851 2SC4617TL-QR
IC851 IRIS DRIVE HALL AMP (A-8)
IC851 RC3414M-TE1
IC853 FOCUS MOTOR DRIVE (B-5)
IC853 MPC1724VMEL
IC854 ZOOM MOTOR DRIVE (B-8)
IC854 LB1830M-TLM
Q853 (A-9) DRIVE CURRENT LIMITER
Q853 XP4401-TX
Q852 LED SWITCH (B-5)
Q852 DTC114EUT106
CAM SI H12
CS A/D H11
CAM SCK D1
CL (14MHZ) H18
REF 2V I7
CAM 5V F4
CAM GND F3
D 5V F5
HALL GAIN I3
HALL OFS I4
IRIS PWM H1
HALL OUT H6
TO VC-112P BOARD (2/3)
(See Page 102)
MT 5V I2
MT GND I1
FOC IN1 G1
FOC IN4 G4
FOC IN2 G2
FOC IN3 G3
ZOOM SPD I5
(W) ZOOM FWD H4
(T) ZOOM REV H5
FOC END FAR H7
FOC END LED H8
FOC END FAR2 H10
<HALLGAIN>
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (-)
16 CONT (+)
15 CONT (-)
14 HALL (-)
13 BIAS (-)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M Ā
7 FOCUS M B̄
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
ZOOM LENS U
no mark : CAMERA REC mode
VC-112P BOARD (3/3)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16
17
18
19
20
21
22
①②③ BIAS CVRRENT CONTROL
⑤⑥⑦ HALL AMP
⑧⑨⑩ ZOOM POSITION
⑫⑬⑭ IRIS METER CONTROL
C852
(B-6)
R868 10k
R851 22k
Q851 2SC4617TL-QR
IC852 LM324DR-E1
VDD
GND
R856 22k
R860 3300
R866 820
C855 0.1 F
R870 47k
R853 3300
C857 0.1 F
R872 330k
<HALLGAIN>
CL869
Q851
BIAS CURRENT
CONTROLL
(B-7)
IC851
IRIS DRIVE
HALL AMP
(A-8)
R854 10k
R852 1000
C851 0.1 B:2125
R859 100k
R858 22k
R867 22k
IC851 RC5414M-TE1
R855 2700
C852 1000p B
R862 180k
R857 180k
R863 680k
CN851 21P
21 ZOOM ENC
20 ZP REF
19 GND
18 DRIVE (+)
17 DRIVE (−)
16 CONT (+)
15 CONT (−)
14 HALL (−)
13 BIAS (−)
12 HALL (+)
11 BIAS (+)
10 ZOOM T
9 ZOOM W
8 FOCUS M A̅
7 FOCUS M B̅
6 FOCUS M B
5 FOCUS M A
4 SENSE VCC
3 EDGE SENSE
2 LED
1 ZONE SENSE
CL871
CL872
CL873
CL851
CL853
CL858
CL857
CL856
CL855
CL854
CL874
CL868
CL862
CL863
CL861
CL860
CL866
CL859
CL867
ZOOM LENS UNIT
ZOOM POSITION
H
M904 IRIS METER
M906 ZOOM MOTOR
M905 FOCUS MOTOR
TAPE SSENSOR
R873 390
Q852 DTC114EUT106
R874 56k
Q852
LED SWITCH
(B-5)
C861 0.01 F
IC853
FOCUS MOTOR
DRIVE
(B-5)
C863 0.01 F
C862 0.01 F
C1H C2H VGG A̅ P GND B VM2 N.C EN2 D GND
IC853 MPC1724VMEL
C1L C2L VM1 A P GND B̅ VCC IN1 IN2 EN1
L853 10μH :3225 TDK
C866 0.01 F
C860 47 6.3V :AL

no mark : CAMERA REC mode

VC-112P BOARD (3/3)

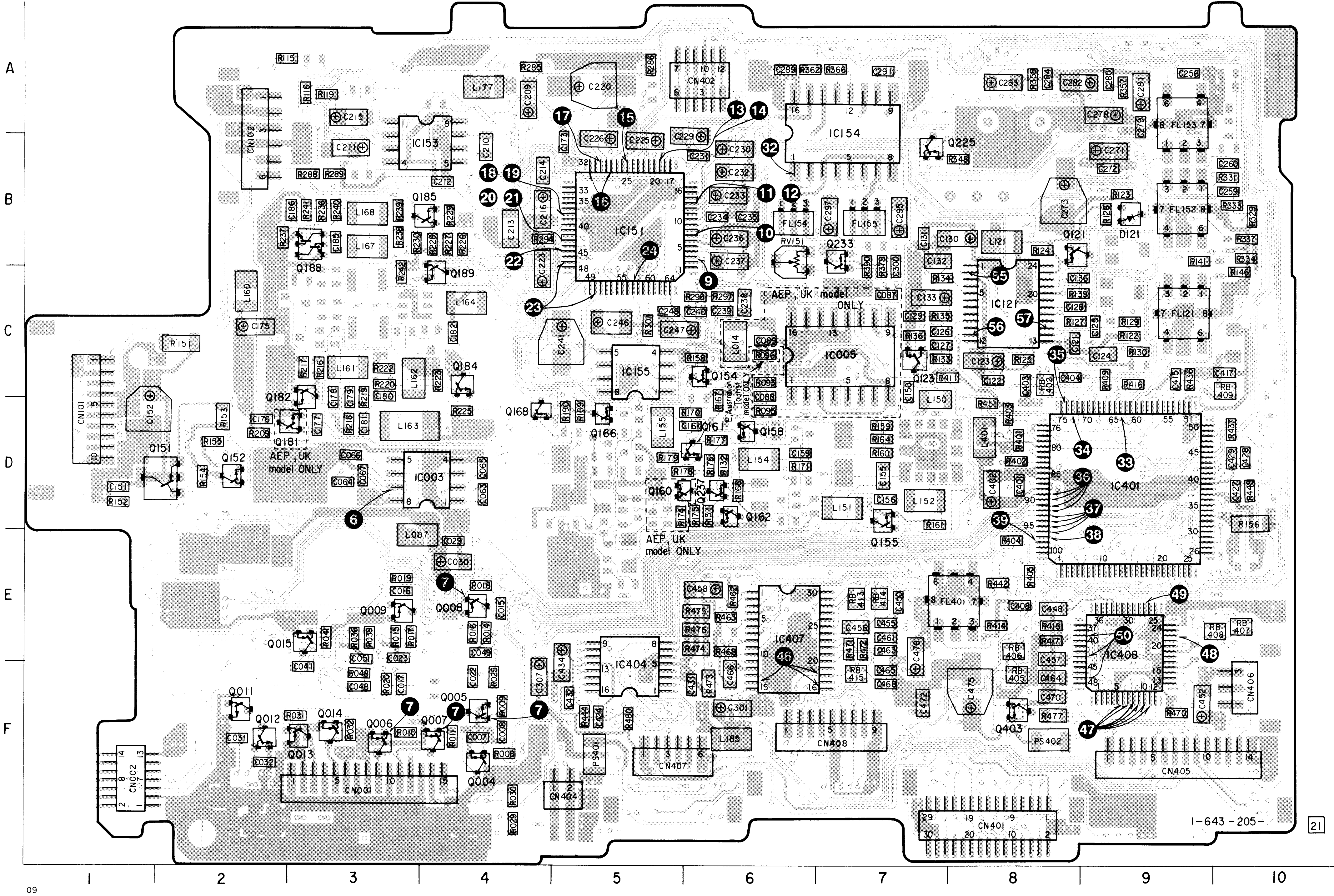
VS-93P (REC/PB HEAD AMP, VIDEO, SERVO/SYSTEM CONTROL, PAL JOG) PRINTED WIRING BOARD

— Ref. No. VS-93P BOARD: 3000 series —

- **For printed wiring boards.**
- VS-93P board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VS-93P BOARD (COMPONENT SIDE)



A
B
C
D
E
F
1
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3
4
5
6
7
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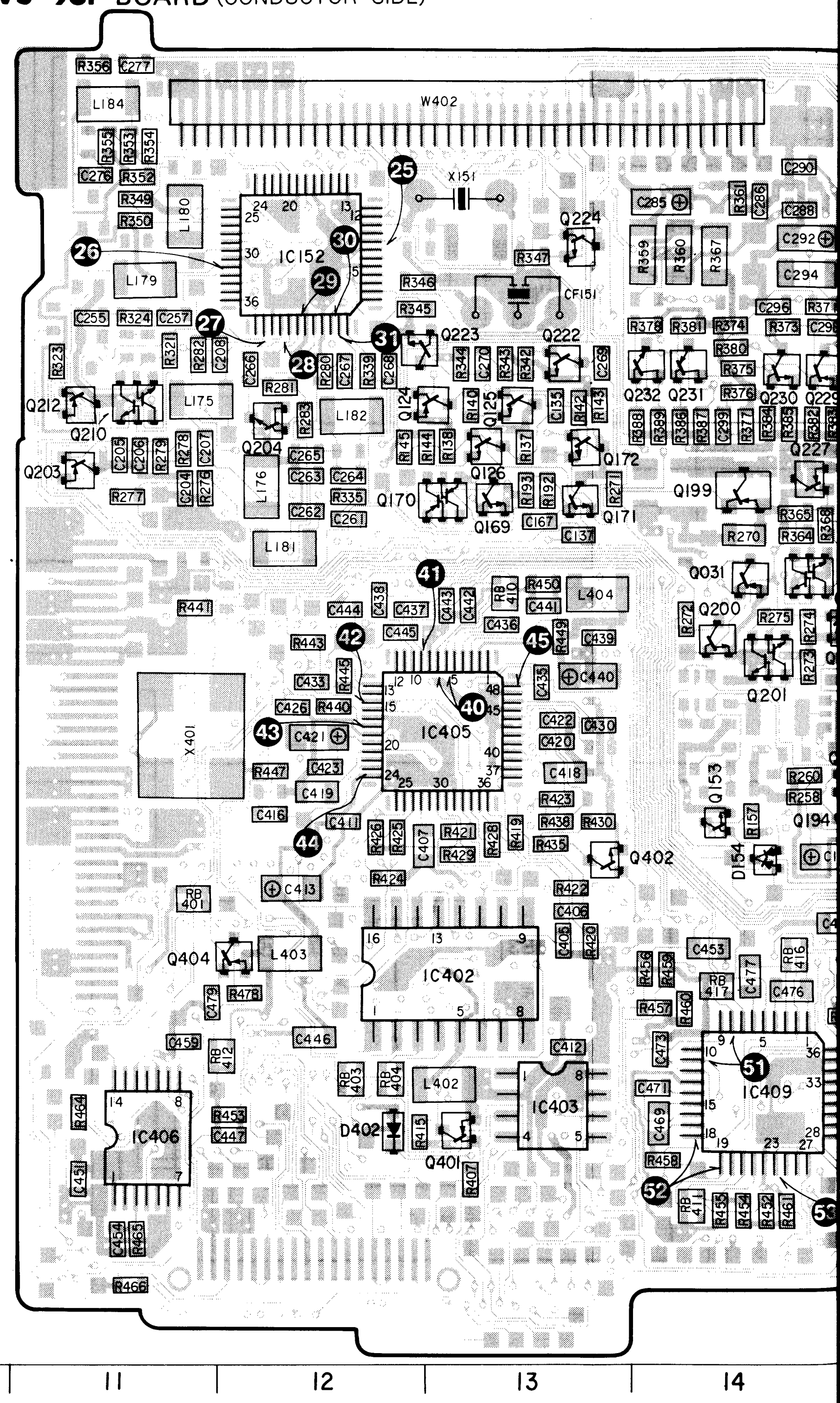
10
IC151
IC153
IC154
IC155
IC003
IC005
IC121
IC401
IC404
IC407
IC408
CN101
CN102
CN402
CN001
CN002
CN401
CN404
CN405
CN406
CN407
CN408
FL154
FL155
FL152
FL153
FL121
FL401
RV151
PS401
PS402
AEP, UK model ONLY
AEP, UK model ONLY
AEP, UK model ONLY
E, Australian, Tourist model ONLY
1-643-205-
21

VS-93P BOARD (CONDUCTOR SIDE)

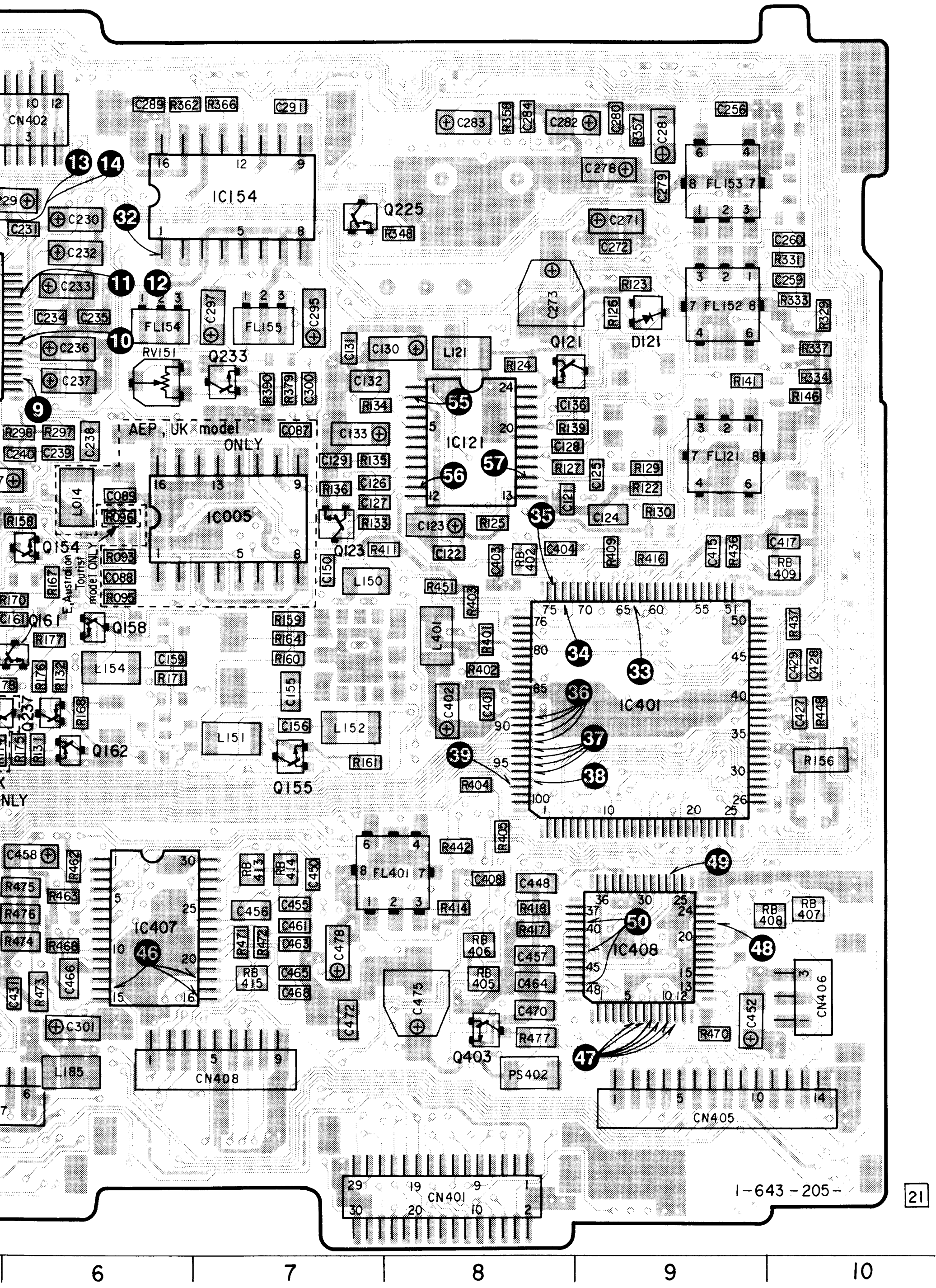


11
12
13
14
W402
X151
X401
CF151
IC152
IC402
IC403
IC405
IC406
IC409

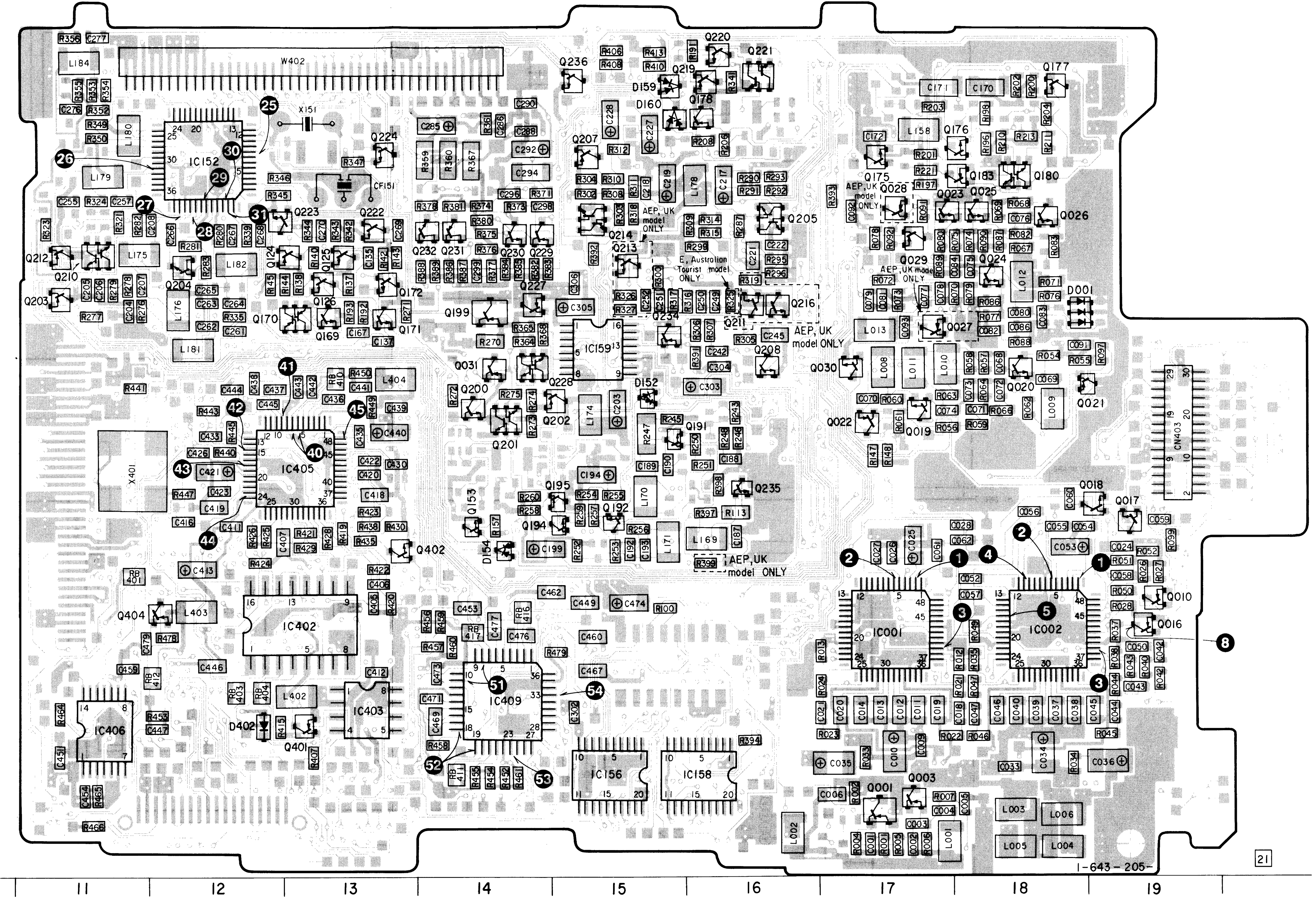
OARD

- **For printed wiring boards.**
- VS-93P board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


IC154
IC121
IC005
IC401
IC407
IC408
FL154
FL155
FL153
FL152
FL121
FL401
CN402
CN408
CN401
CN405
CN406
PS402
AEP, UK model ONLY
1-643-205-
21
6
7
8
9
10

VS-93P BOARD (CONDUCTOR SIDE)


W402
X151
CF151
IC152
IC405
IC402
IC403
IC406
IC409
IC159
IC156
IC158
IC001
IC002
CN403
X401
AEP, UK model ONLY
E, Australian Tourist model ONLY
1-643-205-
21
11
12
13
14
15
16
17
18
19

< DIODE >

D001	8-719-951-22	IC	IMN10
D121	8-719-941-86	DIODE	DAN202U
D152	8-719-421-71	DIODE	MA132WA-TX
D152	8-719-991-00	DIODE	DAP222-TL
D154	8-719-989-03	DIODE	DAN222
D159	8-719-941-86	DIODE	DAN202U
D160	8-719-941-86	DIODE	DAN202U
D402	8-719-404-46	DIODE	MA110

< IC >

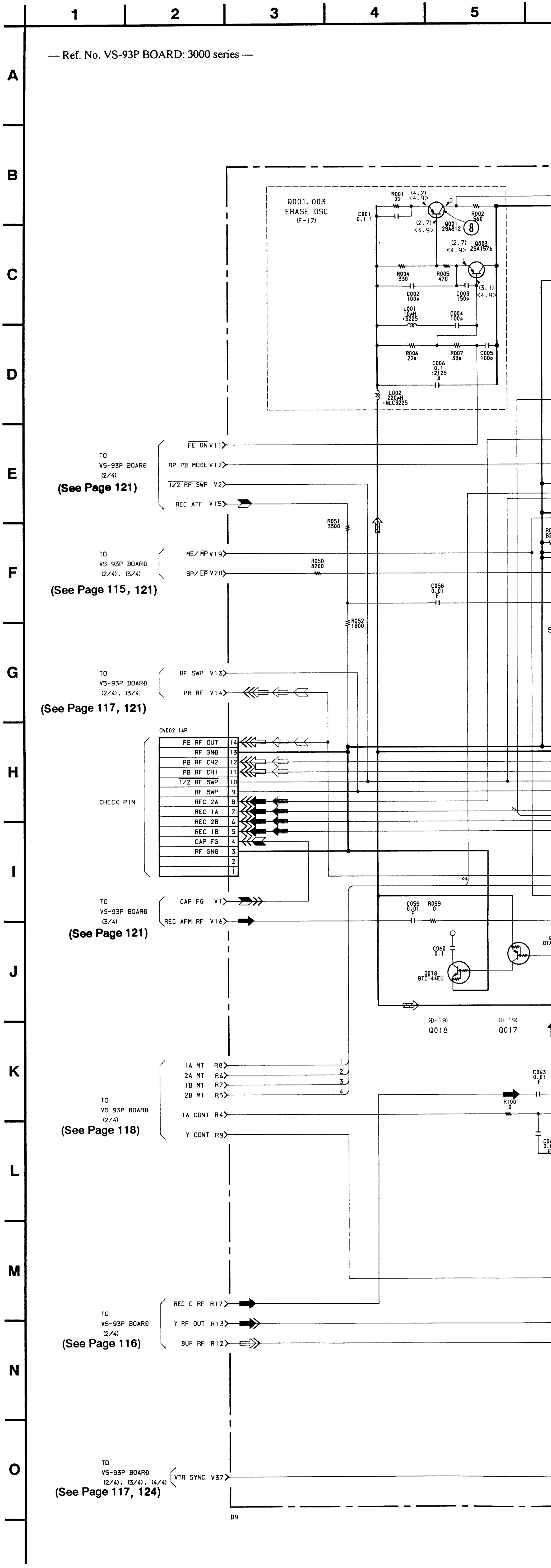
IC001	8-752-033-38	IC	CXA1202R
IC002	8-752-033-38	IC	CXA1202R
IC003	8-752-053-21	IC	CXA1211M
IC005	8-759-998-32	IC	CXD-2107M (AEP, UK model)
IC121	8-759-605-61	IC	CXA1203N
IC151	8-752-036-19	IC	CXA1207R
IC152	8-752-036-20	IC	CXA1208R
IC153	8-759-710-29	IC	NJM2235M
IC154	8-752-333-24	IC	CXL1506M
IC155	8-752-053-21	IC	CXA1211M
IC156	8-759-064-36	IC	MB88346BPFV-EF
IC158	8-759-064-36	IC	MB88346BPFV-EF
IC159	8-759-636-33	IC	CXA1452-E2
IC401	8-752-834-39	IC	CXP80624-293R
IC402	8-759-069-29	IC	uPD6456GS-618
IC403	8-759-044-78	IC	AK6420F
IC404	8-759-057-81	IC	MPC1727VMER
IC405	8-759-059-42	IC	CXA1481AR
IC406	8-759-999-02	IC	TL1596CDB
IC407	8-759-057-77	IC	MCD004BN
IC408	8-759-057-74	IC	MCD002AR-TLM
IC409	8-759-823-90	IC	LB8110M

< TRANSISTOR >

Q001	8-729-216-22	TRANSISTOR	2SA1162-G
Q003	8-729-905-23	TRANSISTOR	2SA1576-R
Q004	8-729-905-18	TRANSISTOR	DTC144EU
Q005	8-729-905-18	TRANSISTOR	DTC144EU
Q006	8-729-823-86	TRANSISTOR	2SA1745
Q007	8-729-823-86	TRANSISTOR	2SA1745
Q008	8-729-905-23	TRANSISTOR	2SA1576-R
Q009	8-729-905-23	TRANSISTOR	2SA1576-R
Q010	8-729-905-12	TRANSISTOR	DTA144EU
Q011	8-729-905-18	TRANSISTOR	DTC144EU
Q012	8-729-905-18	TRANSISTOR	DTC144EU
Q013	8-729-823-86	TRANSISTOR	2SA1745
Q014	8-729-823-86	TRANSISTOR	2SA1745
Q015	8-729-905-23	TRANSISTOR	2SA1576-R
Q016	8-729-905-23	TRANSISTOR	2SA1576-R
Q017	8-729-905-12	TRANSISTOR	DTA144EU
Q018	8-729-905-18	TRANSISTOR	DTC144EU
Q019	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q020	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q021	8-729-905-23	TRANSISTOR	2SA1576-R
Q022	8-729-905-23	TRANSISTOR	2SA1576
Q023	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q024	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q025	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q026	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q027	8-729-905-96	TRANSISTOR	DTA114TU (AEP, UK model)
Q028	8-729-905-96	TRANSISTOR	DTA114TU (AEP, UK model)
Q029	8-729-905-96	TRANSISTOR	DTA114TU
Q030	8-729-905-15	TRANSISTOR	DTC144WU (AEP, UK model)
Q031	8-729-905-18	TRANSISTOR	DTC144EU
Q121	8-729-905-12	TRANSISTOR	DTA144EU
Q123	8-729-905-18	TRANSISTOR	DTC144EU
Q124	8-729-905-12	TRANSISTOR	DTA144EU
Q125	8-729-117-73	TRANSISTOR	2SC4178
Q126	8-729-120-28	TRANSISTOR	2SC1623
Q151	8-729-101-07	TRANSISTOR	2SB798-DL
Q152	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q153	8-729-928-81	TRANSISTOR	DTC144EE
Q154	8-729-927-XX	TRANSISTOR	2SC4617TL-QR
Q155	8-729-823-16	TRANSISTOR	2SC4555-5. 6. 7
Q158	8-729-927-XX	TRANSISTOR	2SC4617TL-QR
Q160	8-729-928-19	TRANSISTOR	2SA1774R (AEP, UK model)
Q161	8-729-927-XX	TRANSISTOR	2SC4617TL-QR
Q162	8-729-928-27	TRANSISTOR	DTA144EE
Q166	8-729-928-19	TRANSISTOR	2SA1774R
Q168	8-729-928-27	TRANSISTOR	DTA144EE
Q169	8-729-905-18	TRANSISTOR	DTC144EU
Q170	8-729-925-47	TRANSISTOR	IMB2
Q171	8-729-117-73	TRANSISTOR	2SC4178
Q172	8-729-117-73	TRANSISTOR	2SC4178
Q175	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q176	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q177	8-729-905-23	TRANSISTOR	2SA1576-R
Q178	8-729-905-23	TRANSISTOR	2SA1576-R
Q180	8-729-422-54	TRANSISTOR	XN4215
Q181	8-729-905-18	TRANSISTOR	DTC144EU (AEP, UK model)
Q182	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q183	8-729-921-58	TRANSISTOR	DTA144TU
Q184	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q185	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q188	8-729-907-26	TRANSISTOR	IMX1
Q189	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q191	8-729-927-XX	TRANSISTOR	2SC4617
Q192	8-729-927-XX	TRANSISTOR	2SC4617TL-QR
Q194	8-729-927-XX	TRANSISTOR	2SC4617TL-QR
Q195	8-729-928-19	TRANSISTOR	2SA1774R
Q199	8-729-807-87	TRANSISTOR	2SB1295-UL6
Q200	8-729-905-18	TRANSISTOR	DTC144EU
Q201	8-729-920-48	TRANSISTOR	IMH2
Q202	8-729-117-16	TRANSISTOR	2SA1611-M6
Q203	8-729-905-23	TRANSISTOR	2SA1576-R
Q204	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q205	8-729-920-48	TRANSISTOR	IMH2
Q207	8-729-905-12	TRANSISTOR	DTA144EU
Q208	8-729-905-18	TRANSISTOR	DTC144EU
Q210	8-729-920-48	TRANSISTOR	IMH2
Q211	8-729-823-16	TRANSISTOR	2SC4555 (AEP, UK model)
Q212	8-729-905-23	TRANSISTOR	2SA1576-R
Q213	8-729-823-16	TRANSISTOR	2SC4555 (AEP, UK model)
Q214	8-729-920-48	TRANSISTOR	IMH2
Q216	8-729-905-18	TRANSISTOR	DTC144EU (AEP, UK model)
Q219	8-729-905-12	TRANSISTOR	DTA144EU
Q220	8-729-905-18	TRANSISTOR	DTC144EU
Q221	8-729-920-48	TRANSISTOR	IMH2
Q222	8-729-120-28	TRANSISTOR	2SC1623
Q223	8-729-905-18	TRANSISTOR	DTC144EU
Q224	8-729-120-28	TRANSISTOR	2SC1623
Q225	8-729-120-28	TRANSISTOR	2SC1623
Q227	8-729-117-16	TRANSISTOR	2SA1611-M6
Q228	8-729-920-48	TRANSISTOR	IMH2
Q229	8-729-905-23	TRANSISTOR	2SA1576
Q230	8-729-120-28	TRANSISTOR	2SC1623
Q231	8-729-905-23	TRANSISTOR	2SA1576-R
Q232	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q233	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q234	8-729-905-23	TRANSISTOR	2SA1576-R
Q235	8-729-928-81	TRANSISTOR	DTC144EE
Q236	8-729-905-09	TRANSISTOR	DTA144WU
Q237	8-729-928-19	TRANSISTOR	2SA1774R
Q401	8-729-905-12	TRANSISTOR	DTA144EU
Q402	8-729-905-18	TRANSISTOR	DTC144EU
Q403	8-729-907-00	TRANSISTOR	DTC114EU
Q404	8-729-905-23	TRANSISTOR	2SA1576-R

VS-93P (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

• Refer to page 108 for F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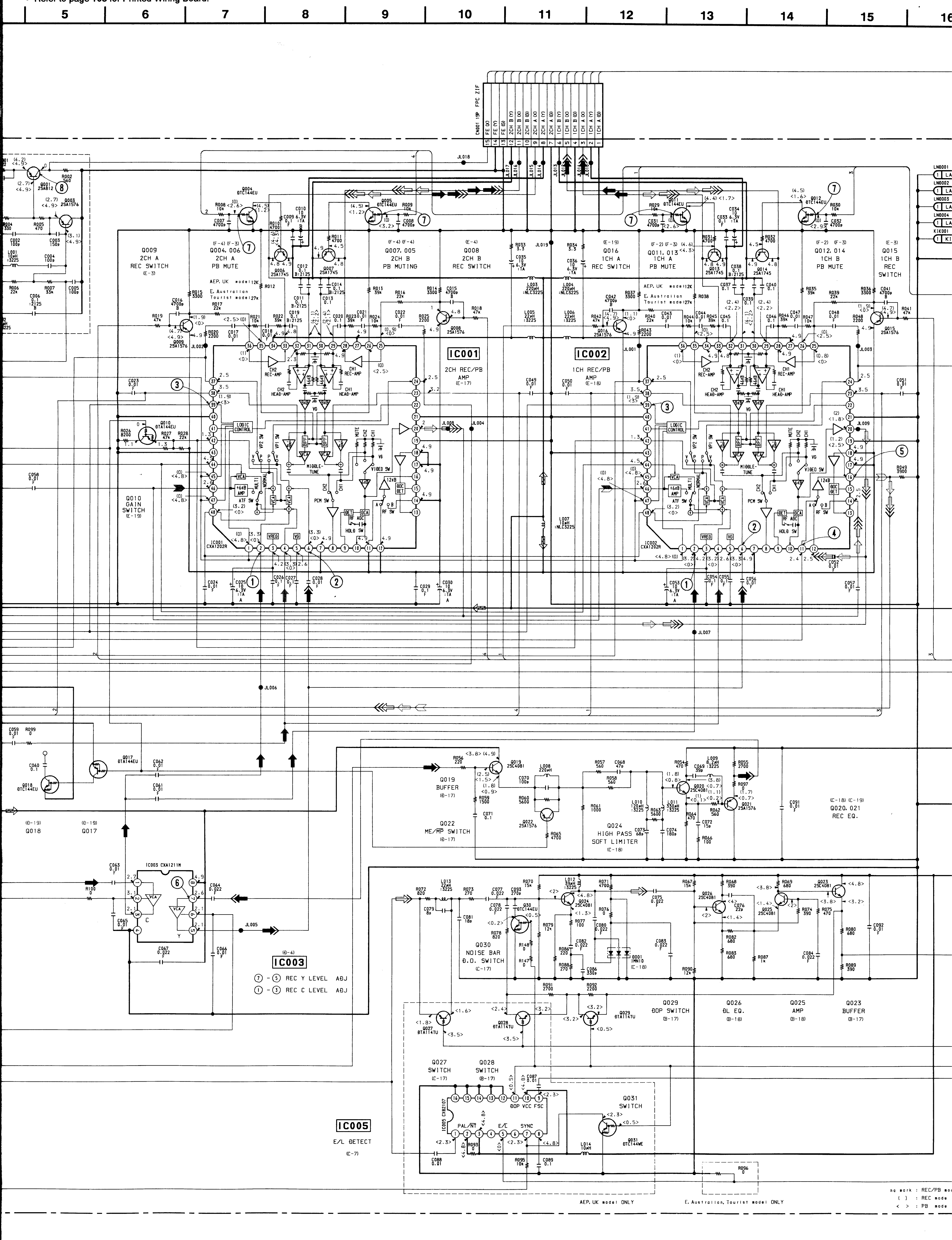
4
5
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
— Ref. No. VS-93P BOARD: 3000 series —
Q001, 003
ERASE OSC
(F-17)
R001 22
(4.2) <4.9>
C001 0.1 F
(2.7) <4.9>
Q001 2SA812
8
R002 560
(2.7) <4.9>
Q003 2SA1576
R004 330
R005 470
C002 100p
C003 150p
(3.1) <4.9>
L001 10µH :3225
C004 100p
R006 22k
R007 33k
C005 100p
C006 0.1 :2125 B
L002 220µH :NLC3225
TO VS-93P BOARD (2/4)
(See Page 121)
FE ON V11
RP PB MODE V12
1/2 RF SWP V2
REC ATF V15
R051 3300
TO VS-93P BOARD (2/4), (3/4)
(See Page 115, 121)
ME/MP V19
SP/LP V20
R050 8200
C058 0.01 F
R052 1800
TO VS-93P BOARD (2/4), (3/4)
(See Page 117, 121)
RF SWP V13
PB RF V14
CN002 14P
CHECK PIN
PB RF OUT 14
RF GND 13
PB RF CH2 12
PB RF CH1 11
1/2 RF SWP 10
RF SWP 9
REC 2A 8
REC 1A 7
REC 2B 6
REC 1B 5
CAP FG 4
RF GND 3
2
1
TO VS-93P BOARD (3/4)
(See Page 121)
CAP FG V1
REC AFM RF V16
C059 0.01 F
R099 0
C060 0.1
Q018 DTC144EU
(D-19) Q018
(D-19) Q017
TO VS-93P BOARD (2/4)
(See Page 118)
1A MT R8
2A MT R6
1B MT R7
2B MT R5
1A CONT R4
Y CONT R9
C063 0.01 F
R100 0
TO VS-93P BOARD (2/4)
(See Page 116)
REC C RF R17
Y RF OUT R13
BUF RF R12
TO VS-93P BOARD (2/4), (3/4), (4/4)
(See Page 117, 124)
VTR SYNC V37
09

- Refer to page 108 for Printed Wiring Board.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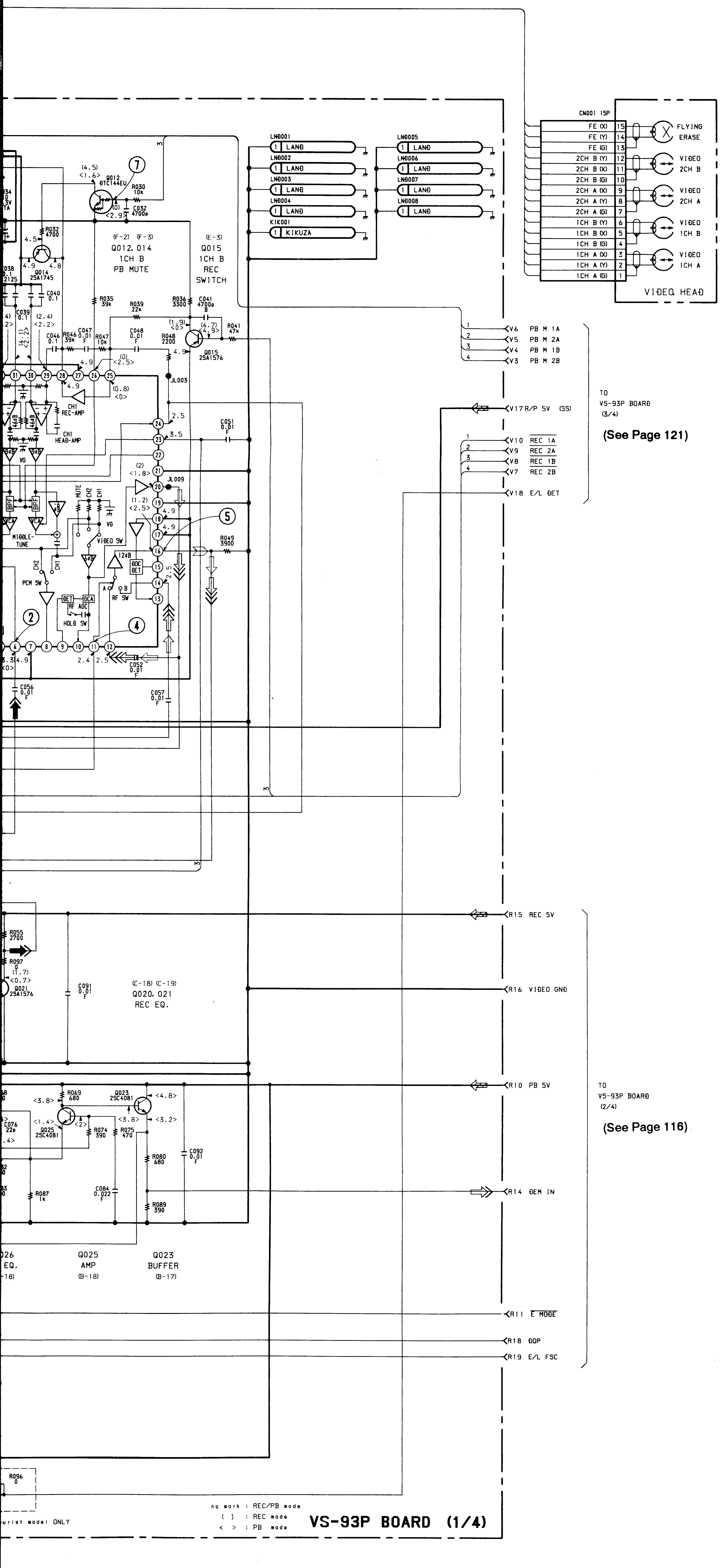
6
7
8
9
10
11
12
13
14
15
CN001 15P FPC ZIF
Q009
2CH A
REC SWITCH
(E-3)
Q004, 006
2CH A
PB MUTE
Q007, 005
2CH B
PB MUTING
Q008
2CH B
REC SWITCH
Q016
1CH A
REC SWITCH
Q011, 013
1CH A
PB MUTE
Q012, 014
1CH B
PB MUTE
Q015
1CH B
REC
SWITCH
AEP, UK model
E. Australian Tourist model
IC001
2CH REC/PB
AMP
(E-17)
IC002
1CH REC/PB
AMP
(E-18)
CXA1202R
LOGIC CONTROL
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
MIDDLE-TUNE
VIDEO SW
PCM SW
RF SW
RF AGC
HOLD SW
ATF SW
VCA
+6dB AMP
MULTI
NORMAL
VREG
VG
BPF
MUTE
BOC DET
12dB
DET
Q010
GAIN
SWITCH
(E-19)
Q018
Q017
Q019
BUFFER
(B-17)
Q022
ME/MP SWITCH
(B-17)
Q024
HIGH PASS
SOFT LIMITER
(C-18)
Q020, 021
REC EQ.
(C-18) (C-19)
IC003 CXA1211M
IC003
(B-4)
⑦ - ⑤ REC Y LEVEL ADJ
① - ③ REC C LEVEL ADJ
Q030
NOISE BAR
D.O. SWITCH
(C-17)
Q029
DOP SWITCH
(B-17)
Q026
DL EQ.
(B-18)
Q025
AMP
(B-18)
Q023
BUFFER
(B-17)
Q027
SWITCH
(C-17)
Q028
SWITCH
(B-17)
IC005 CXA82107
PAL/NT
E/L
SYNC
DOP VCC FSC
IC005
E/L DETECT
(C-7)
Q031
SWITCH
AEP, UK model ONLY
E. Australian, Tourist model ONLY
no mark : REC/PB mo
( ) : REC mode
< > : PB mode
LN0001
LN0002
LN0003
LN0004
K1K001
JL001
JL002
JL003
JL004
JL005
JL006
JL007
JL008
JL009
JL013
JL014
JL015
JL016
JL017
JL018
JL019

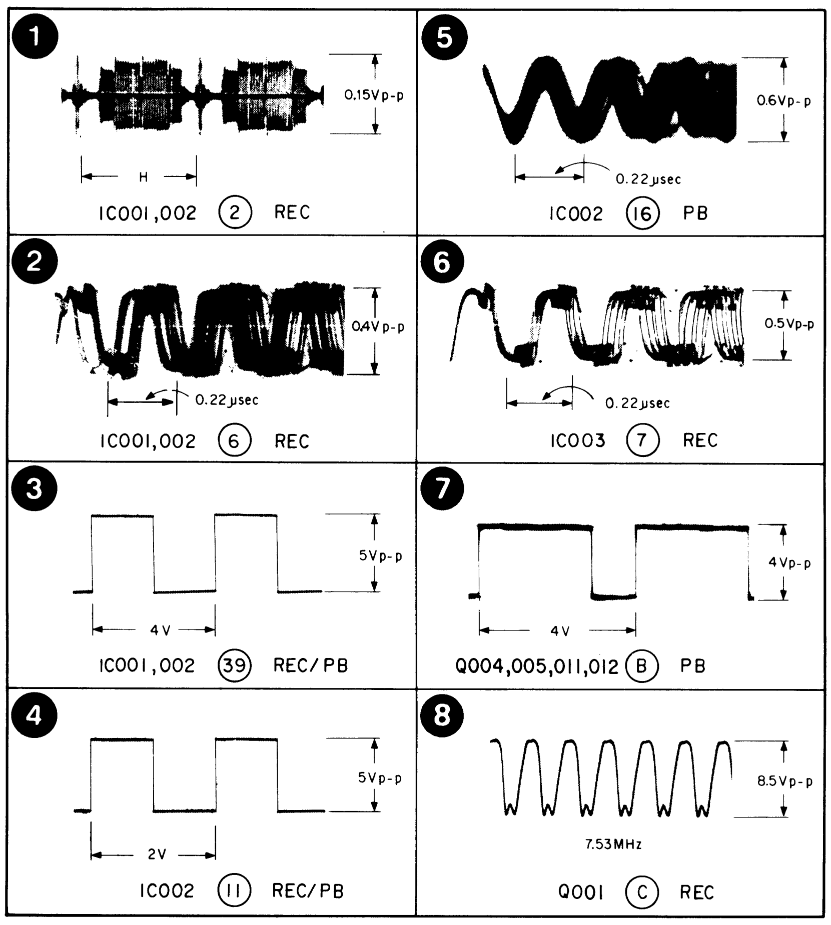

CN001 15P
FE (X) 15
FE (Y) 14
FE (G) 13
2CH B (Y) 12
2CH B (X) 11
2CH B (G) 10
2CH A (X) 9
2CH A (Y) 8
2CH A (G) 7
1CH B (Y) 6
1CH B (X) 5
1CH B (G) 4
1CH A (X) 3
1CH A (Y) 2
1CH A (G) 1
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
VIDEO HEAD
LN0001 LAND
LN0002 LAND
LN0003 LAND
LN0004 LAND
KIK001 KIKUZA
LN0005 LAND
LN0006 LAND
LN0007 LAND
LN0008 LAND
Q012 DTC144EU
R030 10k
C032 4700p
(F-2) (F-3) Q012, 014 1CH B PB MUTE
(E-3) Q015 1CH B REC SWITCH
Q014 2SA1745
R032 4700
R035 39k
R039 22k
R036 3300
C041 4700p B
R041 47k
R048 2200
Q015 2SA1576
C048 0.01 F
C046 0.1
R046 39k
C047 0.01 F
R047 10k
C040 0.1
C039 0.1
JL003
JL009
CH1 REC-AMP
CH1 HEAD-AMP
MIDDLE-TUNE
VIDEO SW
PCM SW
RF SW
RF AGC
HOLD SW
DOC DET
C051 0.01 F
R049 3900
C052 0.01
C056 0.01 F
C057 0.01 F
V6 PB M 1A
V5 PB M 2A
V4 PB M 1B
V3 PB M 2B
V17 R/P 5V (S5)
V10 REC 1A
V9 REC 2A
V8 REC 1B
V7 REC 2B
V18 E/L DET
TO VS-93P BOARD (3/4)
(See Page 121)
R055 2700
R097 0
Q021 2SA1576
C091 0.01 F
(C-18) (C-19) Q020, 021 REC EQ.
R15 REC 5V
R16 VIDEO GND
R10 PB 5V
R14 DEM IN
R11 E MODE
R18 DOP
R19 E/L FSC
TO VS-93P BOARD (2/4)
(See Page 116)
R069 680
Q023 2SC4081
Q025 2SC4081
C076 22p
R074 390
R075 470
R080 680
C092 0.01 F
C084 0.022 F
R087 1k
R089 390
Q025 AMP (B-18)
Q023 BUFFER (B-17)
R096 0
urist model ONLY
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-93P BOARD (1/4)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡⋙	➡
PB			⇨⋙	⇨

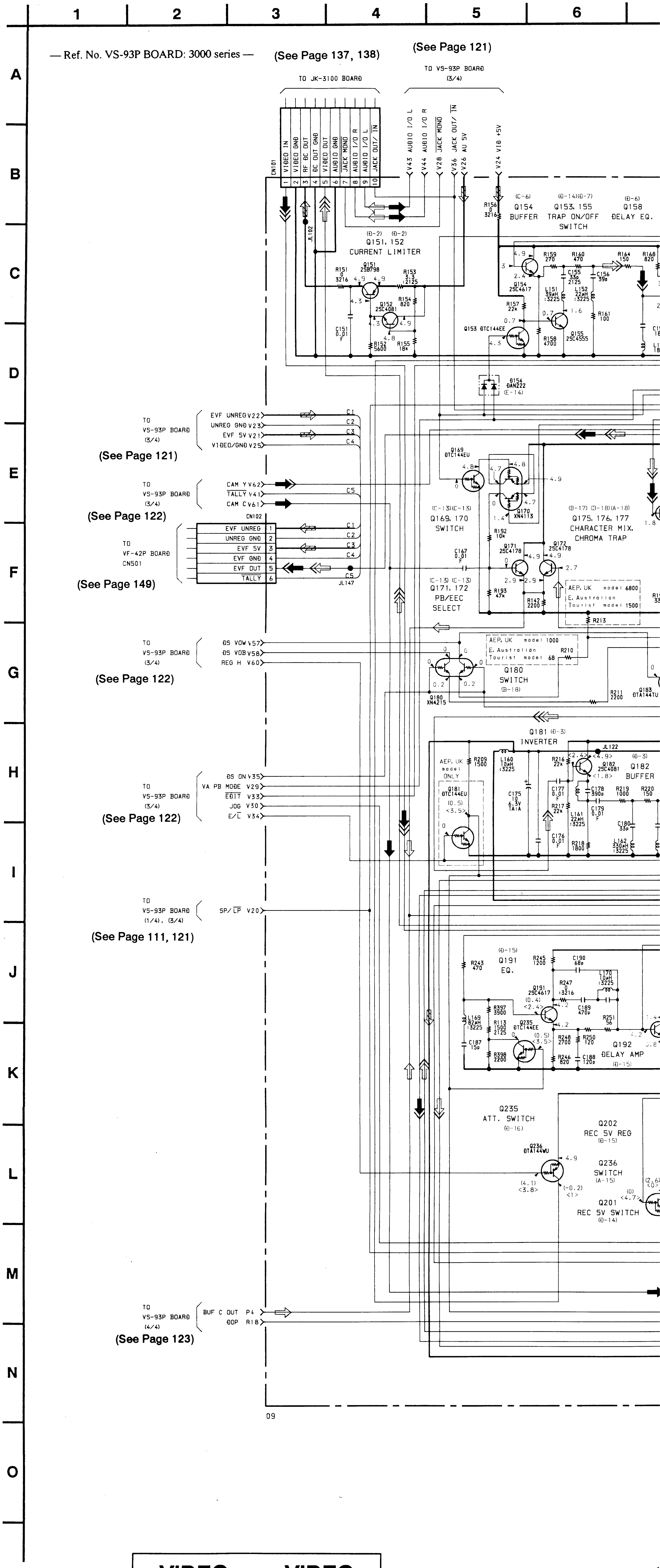
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		▶»	
Ref. signal	▶		▷

VS-93P BOARD(1/4)



VS-93P (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 108 for Printed Wiring Board.



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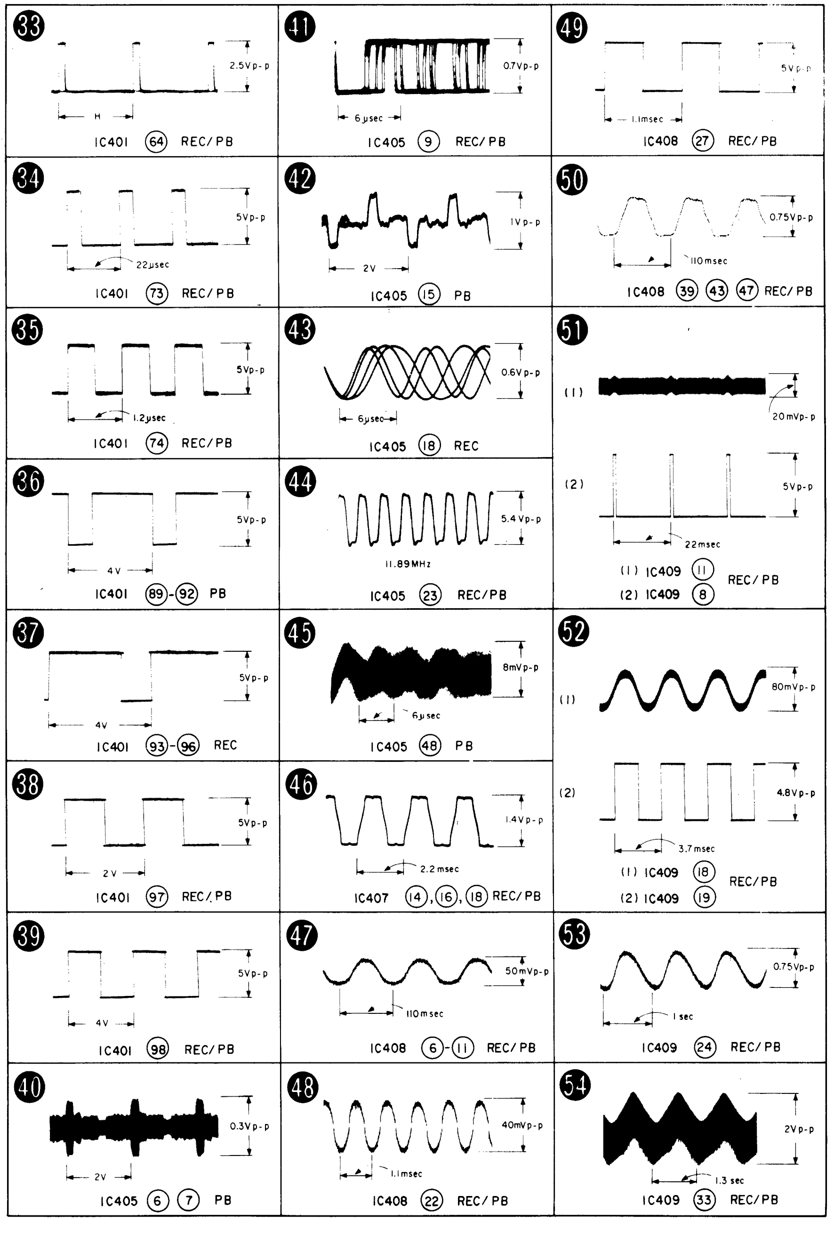
— Ref. No. VS-93P BOARD: 3000 series —
(See Page 137, 138)
TO JK-3100 BOARD
(See Page 121)
TO VS-93P BOARD (3/4)
CN101
1 VIDEO IN
2 VIDEO GND
3 RF BC OUT
4 BC OUT GND
5 VIDEO OUT
6 AUDIO GND
7 JACK MONO
8 AUDIO I/O R
9 AUDIO I/O L
10 JACK OUT/IN
V43 AUDIO I/O L
V44 AUDIO I/O R
V28 JACK MONO
V36 JACK OUT/IN
V26 AU 5V
V24 VIDEO +5V
Q151, 152 CURRENT LIMITER
Q154 BUFFER
Q153, 155 TRAP ON/OFF SWITCH
Q158 DELAY EQ.
Q151 2SB798
Q152 2SC4081
Q153 DTC144EE
Q154 2SC4617
Q155 2SC4555
D154 DAN222
TO VS-93P BOARD (3/4)
EVF UNREG V22
UNREG GND V23
EVF 5V V21
VIDEO/GND V25
(See Page 121)
TO VS-93P BOARD (3/4)
CAM Y V62
TALLY V41
CAM C V61
(See Page 122)
TO VF-42P BOARD CN501
CN102
1 EVF UNREG
2 UNREG GND
3 EVF 5V
4 EVF GND
5 EVF OUT
6 TALLY
(See Page 149)
Q169, 170 SWITCH
Q171, 172 PB/EEC SELECT
Q175, 176, 177 CHARACTER MIX. CHROMA TRAP
AEP, UK model 6800
E. Australian Tourist model 1500
TO VS-93P BOARD (3/4)
DS VOW V57
DS VOB V58
REG H V60
(See Page 122)
AEP, UK model 1000
E. Australian Tourist model 68
Q180 SWITCH
Q180 XN4215
Q181 INVERTER
Q182 BUFFER
AEP, UK model ONLY
TO VS-93P BOARD (3/4)
DS ON V35
VA PB MODE V29
EDIT V33
JOG V30
E/L V34
(See Page 122)
TO VS-93P BOARD (1/4), (3/4)
SP/LP V20
(See Page 111, 121)
Q191 EQ.
Q192 DELAY AMP
Q235 ATT. SWITCH
Q202 REC 5V REG
Q236 SWITCH
Q201 REC 5V SWITCH
TO VS-93P BOARD (4/4)
BUF C OUT P4
DOP R18
(See Page 123)
09

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡⋙	➡
PB	⇨	⇨»	⇨⋙	⇨

VS-93P BOARD (3/4)



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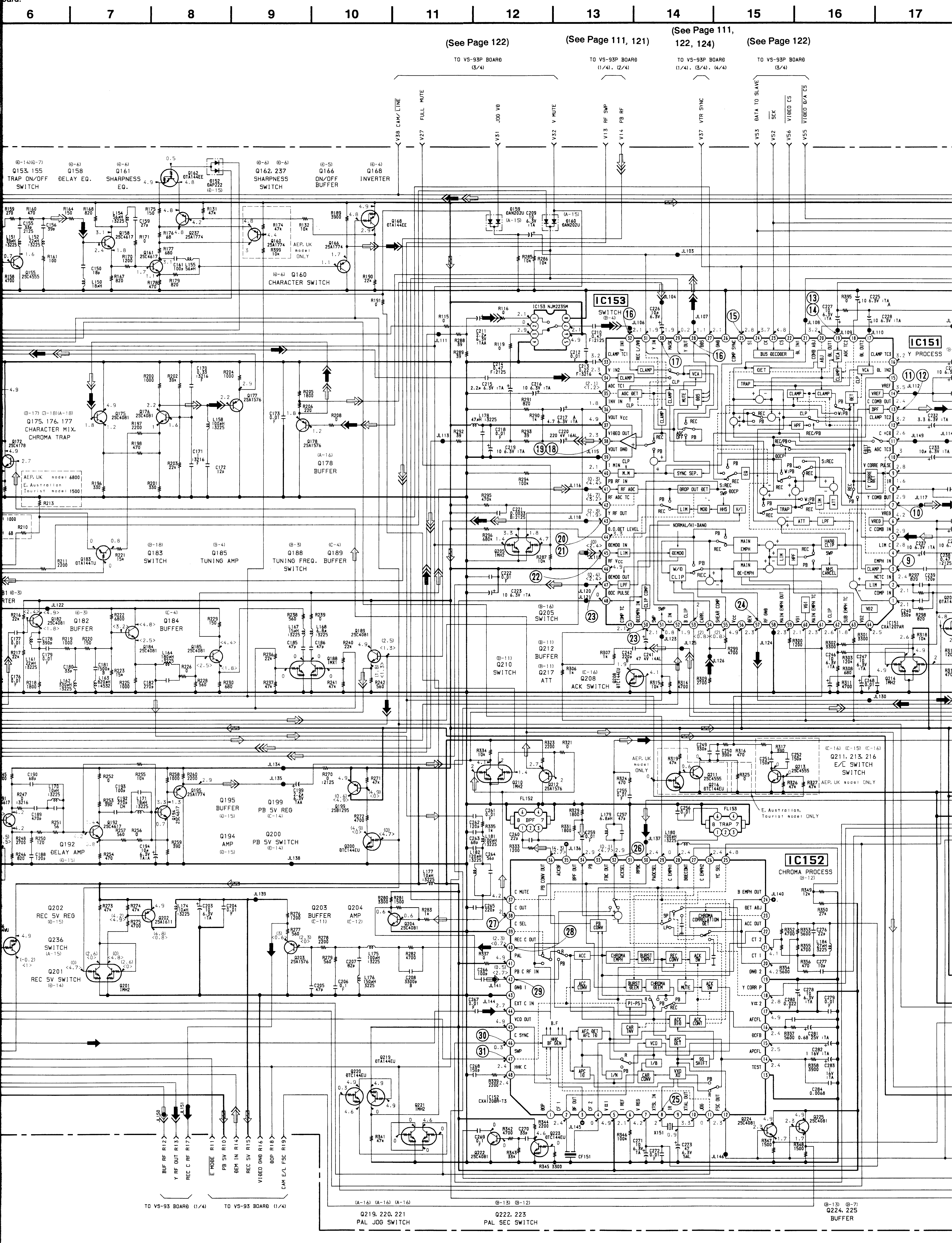
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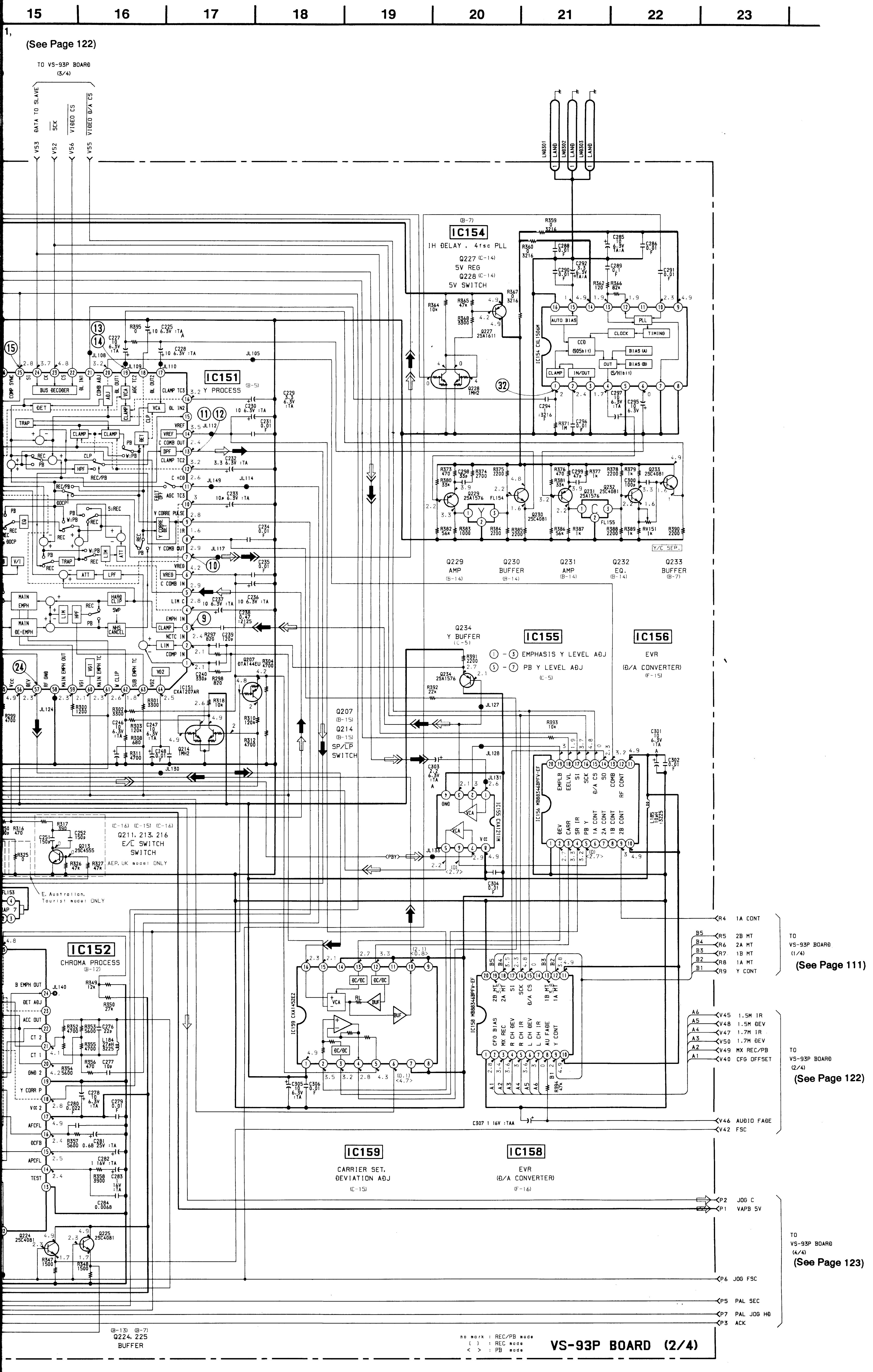
(See Page 122)
TO VS-93P BOARD (3/4)
(See Page 111, 121)
TO VS-93P BOARD (1/4), (2/4)
(See Page 111, 122, 124)
TO VS-93P BOARD (1/4), (3/4), (4/4)
(See Page 122)
TO VS-93P BOARD (3/4)
V38 CAM/LINE
V27 FULL MUTE
V31 JOG VD
V32 V MUTE
V13 RF SWP
V14 PB RF
V37 VTR SYNC
V53 DATA TO SLAVE
V52 SCK
V56 VIDEO CS
V55 VIDEO D/A CS
Q153, 155 TRAP ON/OFF SWITCH
Q158 DELAY EQ.
Q161 SHARPNESS EQ.
Q162, 237 SHARPNESS SWITCH
Q166 ON/OFF BUFFER
Q168 INVERTER
Q160 CHARACTER SWITCH
AEP, UK model ONLY
IC153 SWITCH
IC153 NJM2235M
IC151 Y PROCESS
IC151 CXA1207AR
Q175, 176, 177 CHARACTER MIX, CHROMA TRAP
Q178 BUFFER
AEP, UK model 6800
E, Australian Tourist model 1500
Q183 SWITCH
Q185 TUNING AMP
Q188 TUNING FREQ. SWITCH
Q189 BUFFER
Q205 SWITCH
Q182 BUFFER
Q184 BUFFER
Q210 SWITCH
Q212 BUFFER
Q217 ATT
Q208 ACK SWITCH
Q211, 213, 216 E/L SWITCH
AEP, UK model ONLY
E, Australian, Tourist model ONLY
FL152 BPF
FL153 TRAP
Q195 BUFFER
Q199 PB 5V REG
Q192 DELAY AMP
Q194 AMP
Q200 PB 5V SWITCH
IC152 CHROMA PROCESS
IC152 CXA1208R-T3
Q202 REC 5V REG
Q236 SWITCH
Q201 REC 5V SWITCH
Q203 BUFFER
Q204 AMP
BUF RF R12
Y RF OUT R13
REC C RF R17
E MODE R11
PB 5V R10
BEM IN R14
REC 5V R15
VIDEO GND R16
BOP R18
CAM E/L FSC R19
TO VS-93 BOARD (1/4)
TO VS-93 BOARD (1/4)
Q219, 220, 221 PAL JOG SWITCH
Q222, 223 PAL SEC SWITCH
Q224, 225 BUFFER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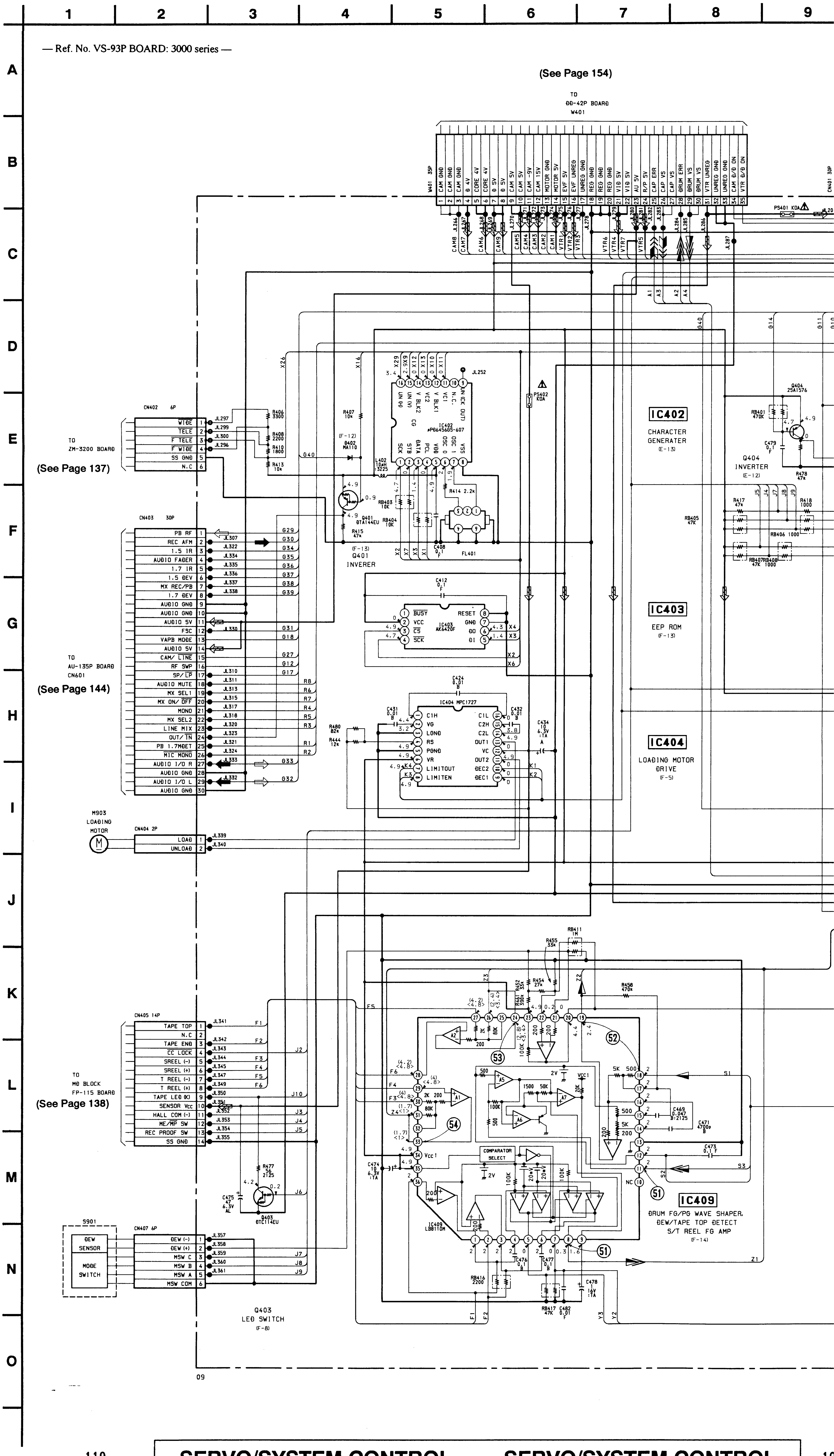
(See Page 122)
TO VS-93P BOARD (3/4)
DATA TO SLAVE
SCK
VIDEO CS
VIDEO D/A CS
VS3
VS2
VS6
VS5
LND301
LND302
LND303
LANB
IC154
IH DELAY , 4fsc PLL
Q227 (C-14) 5V REG
Q228 (C-14) 5V SWITCH
IC154 CXL1506M
AUTO BIAS
PLL
CLOCK
TIMING
CCD (905bit)
BIAS (A)
BIAS (B)
CLAMP
IN/OUT
OUT
(S/H)(bit)
IC151
Y PROCESS
IC151 CXA1207AR
BUS DECODER
DET
TRAP
CLAMP
HPF
REC/PB
VCA
VREF
BPF
C COMB OUT
CLAMP TC2
AGC TC3
Y CORRE PULSE
Y COMB OUT
VREG
C COMB IN
LIM C
EMPH IN
NCTC IN
COMP IN
MAIN EMPH
MAIN DE-EMPH
HARD CLIP
NHS CANCEL
LIM
ATT
LPF
EQ
V/I
Q229 AMP (B-14)
Q230 BUFFER (B-14)
Q231 AMP (B-14)
Q232 EQ. (B-14)
Q233 BUFFER (B-7)
Y/C SEP.
FL154
FL155
Q234 Y BUFFER (C-5)
IC155
① - ③ EMPHASIS Y LEVEL ADJ
⑤ - ⑦ PB Y LEVEL ADJ
(C-5)
IC156
EVR (D/A CONVERTER) (F-15)
IC156 MB88346BPFV-EF
Q207 (B-15)
Q214 (B-15)
SP/LP SWITCH
IC155 CXA1211M
Q211, 213, 216 E/C SWITCH SWITCH
AEP, UK model ONLY
E. Australian, Tourist model ONLY
IC152
CHROMA PROCESS (B-12)
IC159 CXA1452E2
IC159
CARRIER SET. DEVIATION ADJ (C-15)
IC158 MB88346BPFV-EF
IC158
EVR (D/A CONVERTER) (F-16)
R4 1A CONT
R5 2B MT
R6 2A MT
R7 1B MT
R8 1A MT
R9 Y CONT
TO VS-93P BOARD (1/4)
(See Page 111)
V45 1.5M IR
V48 1.5M DEV
V47 1.7M IR
V50 1.7M DEV
V49 MX REC/PB
V40 CFG OFFSET
TO VS-93P BOARD (2/4)
(See Page 122)
V46 AUDIO FADE
V42 FSC
P2 JOG C
P1 VAPB 5V
TO VS-93P BOARD (4/4)
(See Page 123)
P6 JOG FSC
P5 PAL SEC
P7 PAL JOG HD
P3 ACK
Q224, 225 BUFFER
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-93P BOARD (2/4)

• Refer to page 108 for Printed Wiring Board.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— Ref. No. VS-93P BOARD: 3000 series —
(See Page 154)
TO
DD-42P BOARD
W401
W401 35P
1 CAM GND
2 CAM GND
3 CAM GND
4 D 4V
5 CORE 4V
6 CORE 4V
7 D 5V
8 D 5V
9 CAM 5V
10 CAM 5V
11 CAM -9V
12 CAM 15V
13 MOTOR GND
14 MOTOR 5V
15 EVF 5V
16 EVF UNREG
17 UNREG GND
18 REG GND
19 REG GND
20 REG GND
21 V I/O 5V
22 V I/O 5V
23 AU 5V
24 R/P 5V
25 CAP ERR
26 CAP VS
27 CAP VS
28 DRUM ERR
29 DRUM VS
30 DRUM VS
31 VTR UNREG
32 UNREG GND
33 UNREG GND
34 CAM D/D ON
35 VTR D/D ON
CN401 35P
PS401 KOA
CAM8
CAM7
CAM6
CAM9
CAM5
CAM4
CAM3
CAM2
CAM1
VTR1
VTR2
VTR3
VTR6
VTR4
VTR7
VTR5
A1
A3
A2
A4
G40
G14
G11
X26
X16
JL252
IC402
μPD6456G5-607
PS402
KOA
IC402
CHARACTER
GENERATER
(E-13)
Q404
2SA1576
RB401 470K
C479 0.1 F
Q404
INVERTER
(E-12)
R478 47k
CN402 6P
WIDE
TELE
F TELE
F WIDE
SS GND
N.C
TO
ZM-3200 BOARD
(See Page 137)
R406 3300
R408 2200
R410 1800
R413 10k
R407 10k
(F-12)
D402
MA110
L402 10μH
R414 2.2k
RB403 10K
Q401
DTA144EU
RB404 10K
R415 47k
(F-13)
Q401
INVERER
C408 0.1 F
FL401
R417 47k
R418 1000
RB405 47K
RB406 1000
RB407 47K
RB408 1000
CN403 30P
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.7 IR
1.5 DEV
MX REC/PB
1.7 DEV
AUDIO GND
AUDIO GND
AUDIO 5V
FSC
VAPB MODE
AUDIO 5V
CAM/ LINE
RF SWP
SP/ LP
AUDIO MUTE
MX SEL1
MX ON/ OFF
MONO
MX SEL2
LINE MIX
OUT/ IN
PB 1.7MDET
MIC MONO
AUDIO I/O R
AUDIO GND
AUDIO I/O L
AUDIO GND
TO
AU-135P BOARD
CN601
(See Page 144)
C412 0.1 F
IC403
AK6420F
BUSY
VCC
CS
SCK
RESET
GND
DO
DI
IC403
EEP ROM
(F-13)
C424 0.01 B
IC404 MPC1727
C431 0.01 B
C432 0.01 B
C1H
VG
LGND
RS
PGND
VR
LIMITOUT
LIMITEN
C1L
C2H
C2L
OUT1
VC
OUT2
DEC2
DEC1
C434 10 6.3V TA
R480 82k
R444 12k
IC404
LOADING MOTOR
DRIVE
(F-5)
M903
LOADING
MOTOR
CN404 2P
LOAD
UNLOAD
RB411 1M
R455 33k
R454 27k
R452 33k
R451 330k
R456 470k
CN405 14P
TAPE TOP
N.C
TAPE END
CC LOCK
SREEL (-)
SREEL (+)
T REEL (-)
T REEL (+)
TAPE LED (K)
SENSOR Vcc
HALL COM (-)
ME/MP SW
REC PROOF SW
SS GND
TO
MD BLOCK
FP-115 BOARD
(See Page 138)
(53)
(52)
(54)
(51)
COMPARATOR SELECT
C469 0.047 B:2125
C471 4700p B
C473 0.1 F
C474 10 6.3V TA
R477 56 2125
C475 47 6.3V AL
Q403
DTC114EU
IC409
LB8110M
C476 0.1 B
C477 0.1 B
RB416 2200
RB417 47K
C482 0.01 F
C478 1 16V TA
IC409
DRUM FG/PG WAVE SHAPER,
DEW/TAPE TOP DETECT
S/T REEL FG AMP
(F-14)
S901
DEW
SENSOR
MODE
SWITCH
CN407 6P
DEW (-)
DEW (+)
MSW C
MSW B
MSW A
MSW COM
Q403
LED SWITCH
(F-8)
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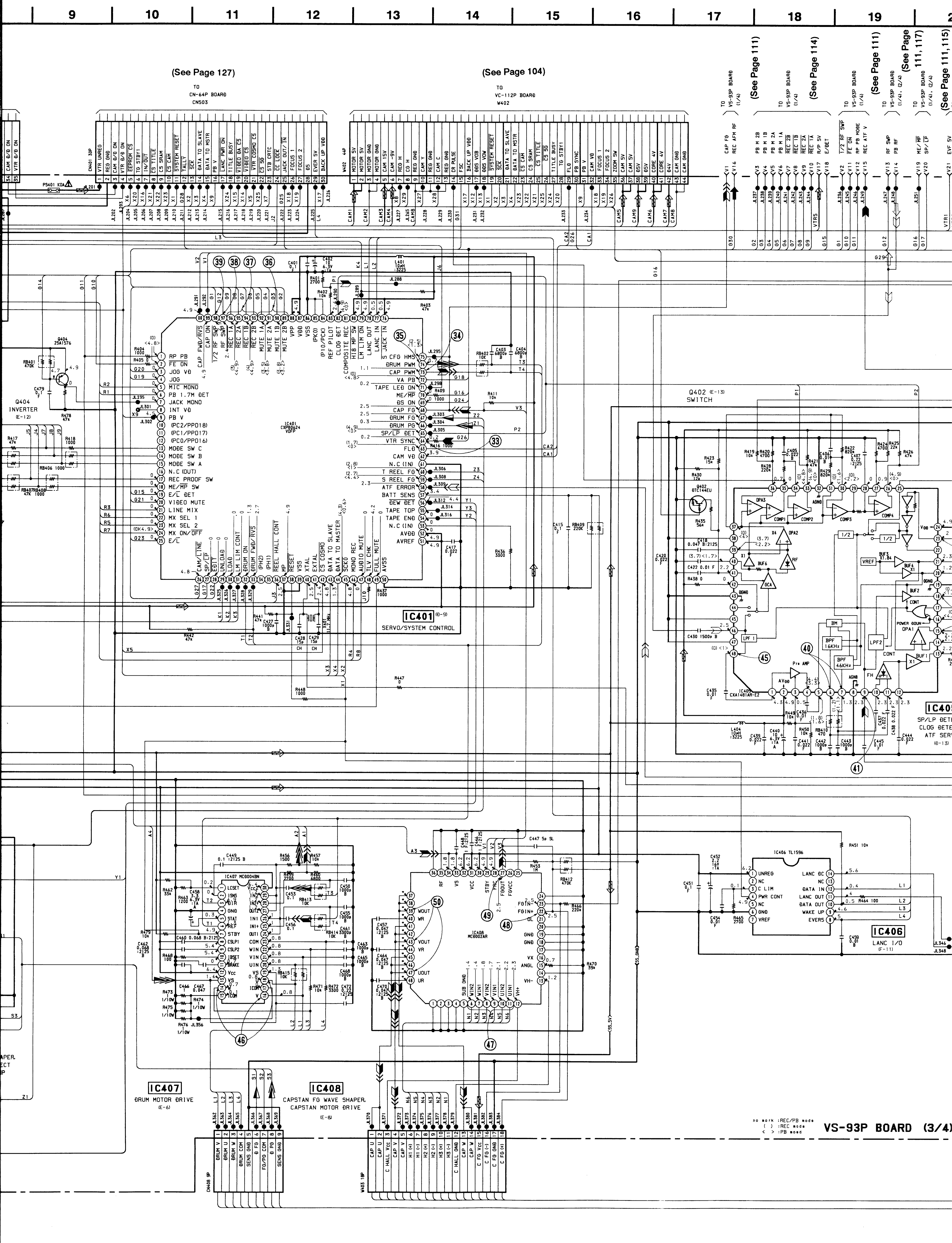
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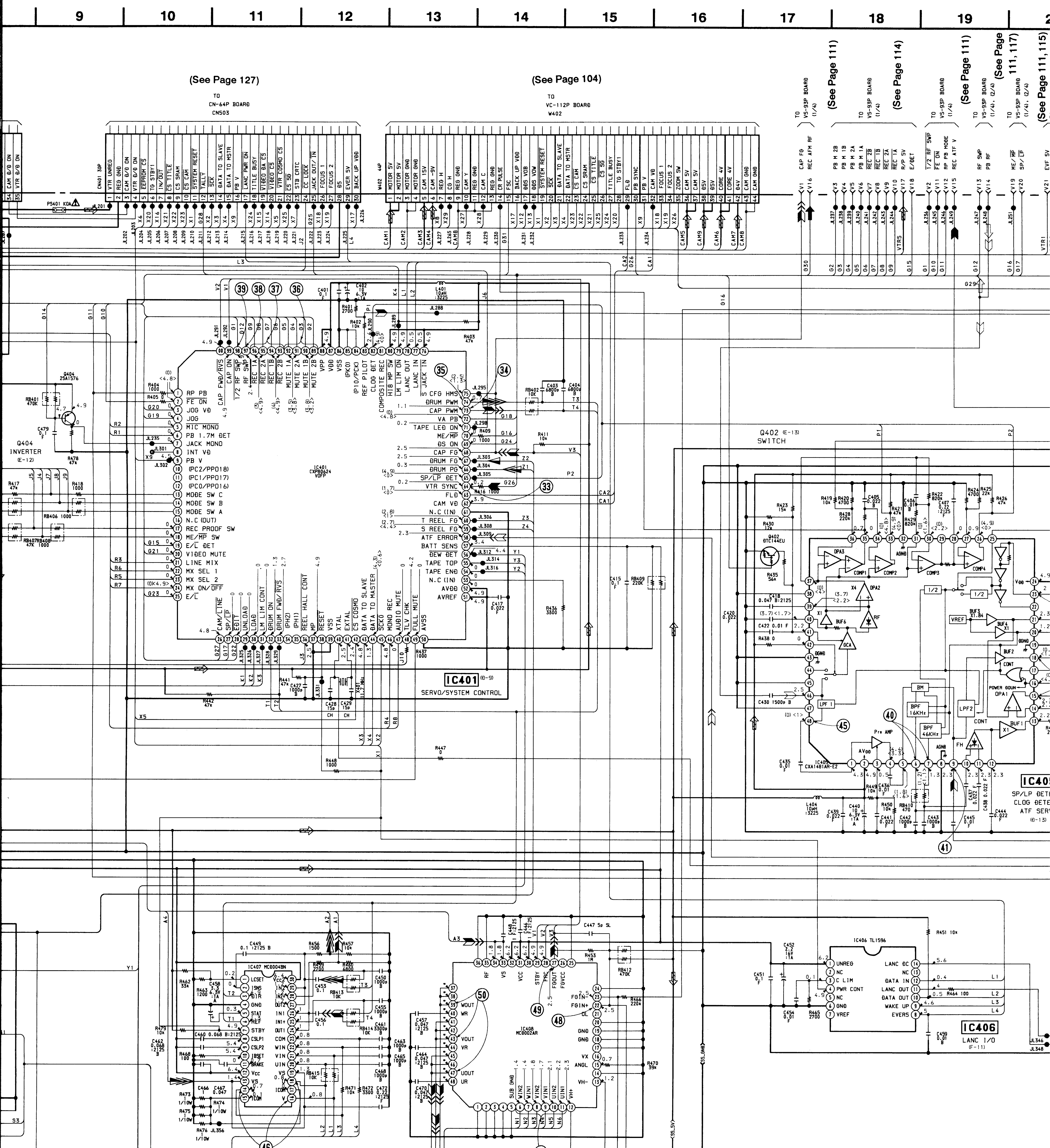
(See Page 127)
TO CN-64P BOARD CN503
(See Page 104)
TO VC-112P BOARD W402
TO VS-93P BOARD (1/4)
(See Page 111)
TO VS-93P BOARD (1/4)
(See Page 114)
TO VS-93P BOARD (1/4)
(See Page 111)
TO VS-93P BOARD (1/4, 2/4)
(See Page 111, 117)
TO VS-93P BOARD (1/4, 2/4)
(See Page 111,115)
CN401 30P
VTR UNREG
REG GND
CAM D/D ON
VTR D/D ON
EEPROM CS
TG STBY1
IN/OUT
CS TITLE
CS SRAM
CS CAM
SYSTEM RESET
TALLY
SCK
DATA TO SLAVE
DATA TO MSTR
PB V
LANC PWR ON
TITLE BUSY
VIDEO CS
VTR CS
VTR COSMO CS
CS SG
STB CRTC
CC LOCK
JACK OUT/IN
FOCUS 1
FOCUS 2
DS
EVER 5V
BACK UP VDD
W402 44P
MOTOR 5V
MOTOR 5V
MOTOR GND
MOTOR GND
CAM 15V
CAM -9V
REG H
CG H
REG GND
CAM Y
REG GND
CAM C
REG GND
CN PULSE
FSC
BACK UP VDD
DBS VDD
DBS VDW
SYSTEM RESET
SCK
DATA TO SLAVE
DATA TO MSTR
CS CAM
CS SRAM
CS TITLE
CS SG
TITLE BUSY
TG STBY1
FLD
PB SYNC
PB V
CAM VD
FOCUS 1
FOCUS 2
ZOOM SW
CAM 5V
CAM 5V
DSV
DSV
CORE 4V
CORE 4V
D4V
CAM GND
CAM GND
CAP FG
REC AFM RF
PB M 2B
PB M 1B
PB M 2A
PB M 1A
REC 2B
REC 1B
REC 2A
REC 1A
R/P 5V
E/DET
1/2 RF SWP
FE ON
RP PB MODE
REC ATF V
RF SWP
PB RF
ME/MP
SP/LP
EVF 5V
PS401 KOA
Q404 2SA1576
Q404 INVERTER (E-12)
Q402 (E-13) SWITCH
Q402 DTC144EU
IC401 CXP80624 VDFP
IC401 (D-9) SERVO/SYSTEM CONTROL
RP PB
FE ON
JOG VD
JOG
MIC MONO
PB 1.7M DET
JACK MONO
INT VD
PB V
(PC2/PP018)
(PC1/PP017)
(PC0/PP016)
MODE SW C
MODE SW B
MODE SW A
N.C (OUT)
REC PROOF SW
ME/MP SW
E/L DET
VIDEO MUTE
LINE MIX
MX SEL 1
MX SEL 2
MX ON/OFF
E/L
S CFG HMS
DRUM PWM
CAP PWM
VA PB
TAPE LED ON
ME/MP
DS ON
CAP FG
DRUM FG
DRUM PG
SP/LP DET
VTR SYNC
FLD
CAM VD
N.C (IN)
T REEL FG
S REEL FG
ATF ERROR
BATT SENS
DEW DET
TAPE TOP
TAPE END
N.C (IN)
AVDD
AVREF
IC406 TL1596
UNREG
NC
C LIM
PWR CONT
NC
GND
VREF
LANC DC
NC
DATA IN
LANC OUT
DATA OUT
WAKE UP
EVERS
IC406 LANC I/O (F-11)
IC409 CXA1481AR-E2
IC409 SP/LP DET, CLOG DET, ATF SERV (D-13)
IC407 MC0004BN
IC407 DRUM MOTOR DRIVE (E-6)
IC408 MC0002AR
IC408 CAPSTAN FG WAVE SHAPER, CAPSTAN MOTOR DRIVE (E-8)
CN408 9P
DRUM V
DRUM U
DRUM W
DRUM COM
SENS GND
D FG
FG/PG COM
D PG
SENS GND
W403 18P
CAP U
CAP U
C HALL Vcc
CAP V
CAP V
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
C HALL GND
CAP W
CAP W
C FG Vcc
C FG (-)
C FG GND
C FG (+)
(S5.5V)
(S5.0V)

no mark :REC/PB mode
( ) :REC mode
< > :PB mode

VS-93P BOARD (3/4)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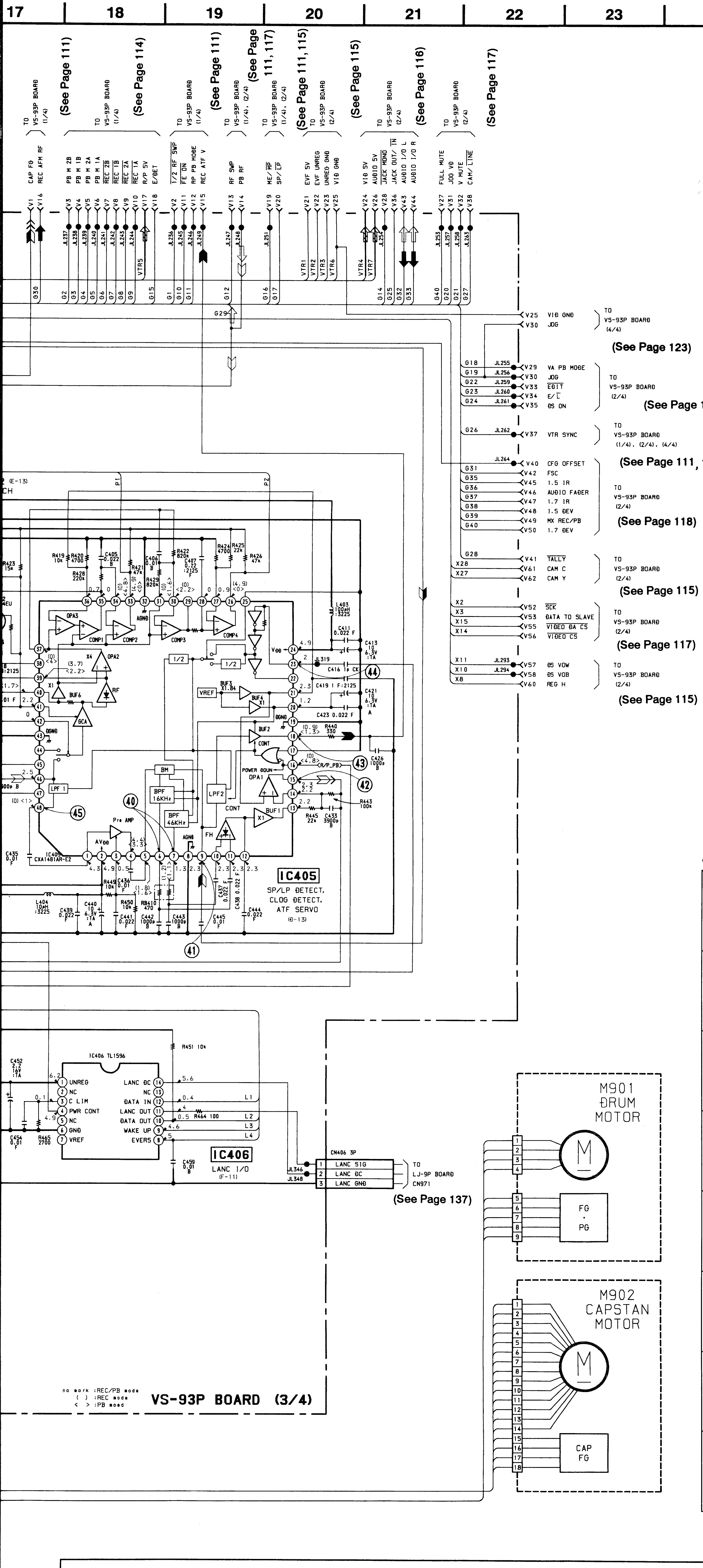
(See Page 127)
TO CN-64P BOARD CN503
(See Page 104)
TO VC-112P BOARD W402
TO VS-93P BOARD (1/4)
(See Page 111)
(See Page 114)
(See Page 111, 117)
(See Page 111, 115)
CN401 35P
W402 44P
Q404 2SA1576
Q404 INVERTER (E-12)
IC401 CXP80624 VDFP
IC401 (D-9) SERVO/SYSTEM CONTROL
Q402 (E-13) SWITCH
Q402 DTC144EU
IC405 CXA1481AR-E2
IC405 SP/LP DET, CLOG DET, ATF SERVO (D-13)
IC406 TL1596
IC406 LANC I/O (F-11)
IC407 MC0004BN
IC407 DRUM MOTOR DRIVE (E-6)
IC408 MC0002AR
IC408 CAPSTAN FG WAVE SHAPER, CAPSTAN MOTOR DRIVE (E-8)
CN408 9P
W403 18P
P5401 KOA
no mark :REC/PB mode
( ) :REC mode
< > :PB mode
VS-93P BOARD (3/4)


17
18
19
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24
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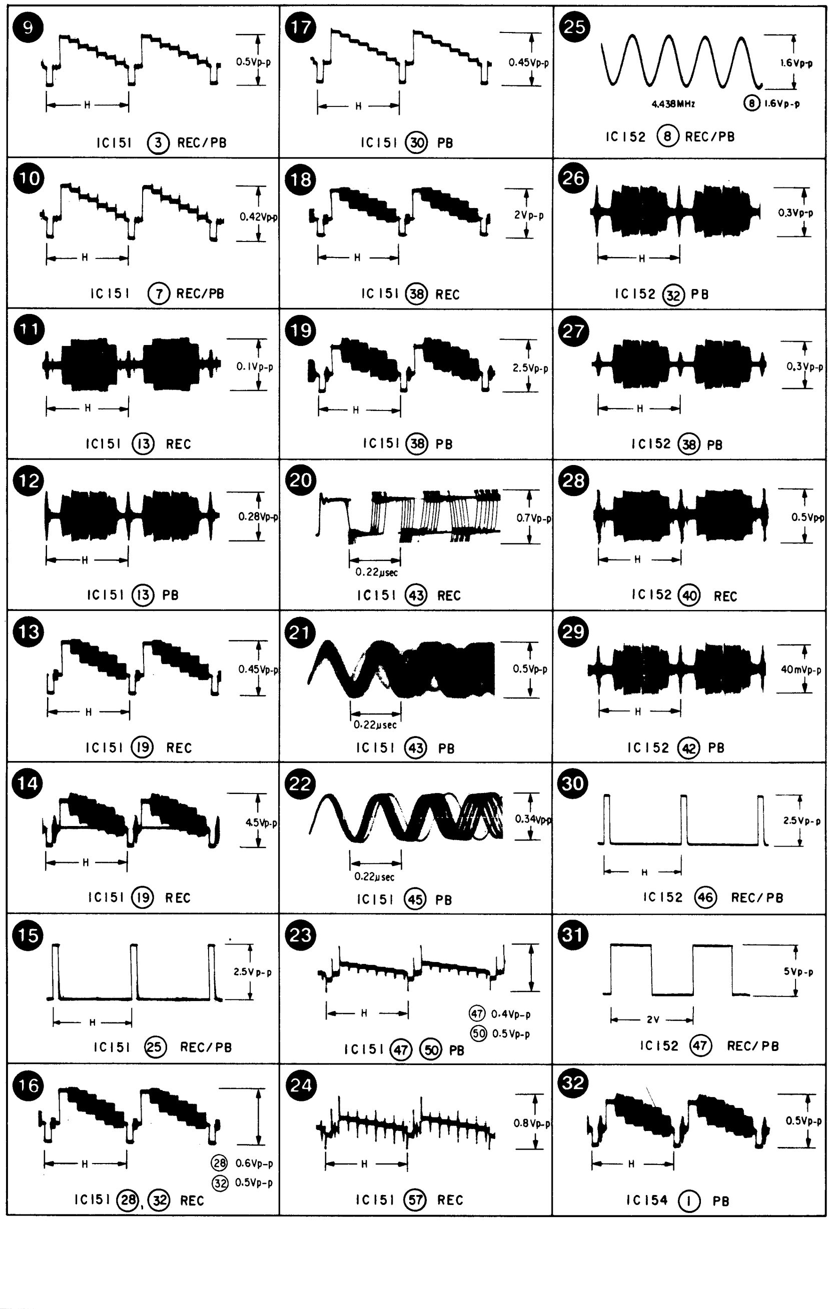
26
27
28
TO VS-93P BOARD (1/4) (See Page 111)
TO VS-93P BOARD (1/4) (See Page 114)
TO VS-93P BOARD (1/4) (See Page 111)
TO VS-93P BOARD (1/4), (2/4) (See Page 111, 117)
TO VS-93P BOARD (1/4), (2/4) (See Page 111, 115)
TO VS-93P BOARD (2/4) (See Page 115)
TO VS-93P BOARD (2/4) (See Page 116)
TO VS-93P BOARD (2/4) (See Page 117)
CAP FG
REC AFM RF
PB M 2B
PB M 1B
PB M 2A
PB M 1A
REC 2B
REC 1B
REC 2A
REC 1A
R/P 5V
E/BET
1/2 RF SWP
FE ON
RP PB MODE
REC ATF V
RF SWP
PB RF
HE/HP
SP/LP
EVF 5V
EVF UNREG
UNREG GND
VIÐ GND
VIÐ 5V
AUDIO 5V
JACK MONO
JACK OUT/IN
AUDIO I/O L
AUDIO I/O R
FULL MUTE
JOG VÐ
V MUTE
CAM/LINE
V25 VIÐ GND
V30 JOG
TO VS-93P BOARD (4/4)
(See Page 123)
V29 VA PB MODE
V30 JOG
V33 EDIT
V34 E/C
V35 ØS ON
TO VS-93P BOARD (2/4)
(See Page 115)
V37 VTR SYNC
TO VS-93P BOARD (1/4), (2/4), (4/4)
(See Page 111, 117, 124)
V40 CFG OFFSET
V42 FSC
V45 1.5 IR
V46 AUDIO FADER
V47 1.7 IR
V48 1.5 ØEV
V49 MX REC/PB
V50 1.7 ØEV
TO VS-93P BOARD (2/4)
(See Page 118)
V41 TALLY
V61 CAM C
V62 CAM Y
TO VS-93P BOARD (2/4)
(See Page 115)
V52 SCK
V53 ÐATA TO SLAVE
V55 VIÐEO ÐA CS
V56 VIÐEO CS
TO VS-93P BOARD (2/4)
(See Page 117)
V57 ØS VOW
V58 ØS VOB
V60 REG H
TO VS-93P BOARD (2/4)
(See Page 115)
IC405 CXA1481AR-E2
IC405
SP/LP ÐETECT, CLOG ÐETECT, ATF SERVO
(Ð-13)
OPA1
OPA2
OPA3
COMP1
COMP2
COMP3
COMP4
BUF1
BUF2
BUF3
BUF4
BUF6
GCA
BPF 16KHz
BPF 46KHz
LPF1
LPF2
BM
Pre AMP
POWER DOWN
VREF
AGND
DGND
CONT
1/2
IC406 TL1596
UNREG
NC
C LIM
PWR CONT
NC
GND
VREF
LANC DC
NC
DATA IN
LANC OUT
DATA OUT
WAKE UP
EVERS
IC406
LANC I/O
(F-11)
CN406 3P
LANC SIG
LANC DC
LANC GND
TO LJ-9P BOARD CN971
(See Page 137)
M901
DRUM MOTOR
M
FG · PG
M902
CAPSTAN MOTOR
M
CAP FG
no mark :REC/PB mode
( ) :REC mode
< > :PB mode
VS-93P BOARD (3/4)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

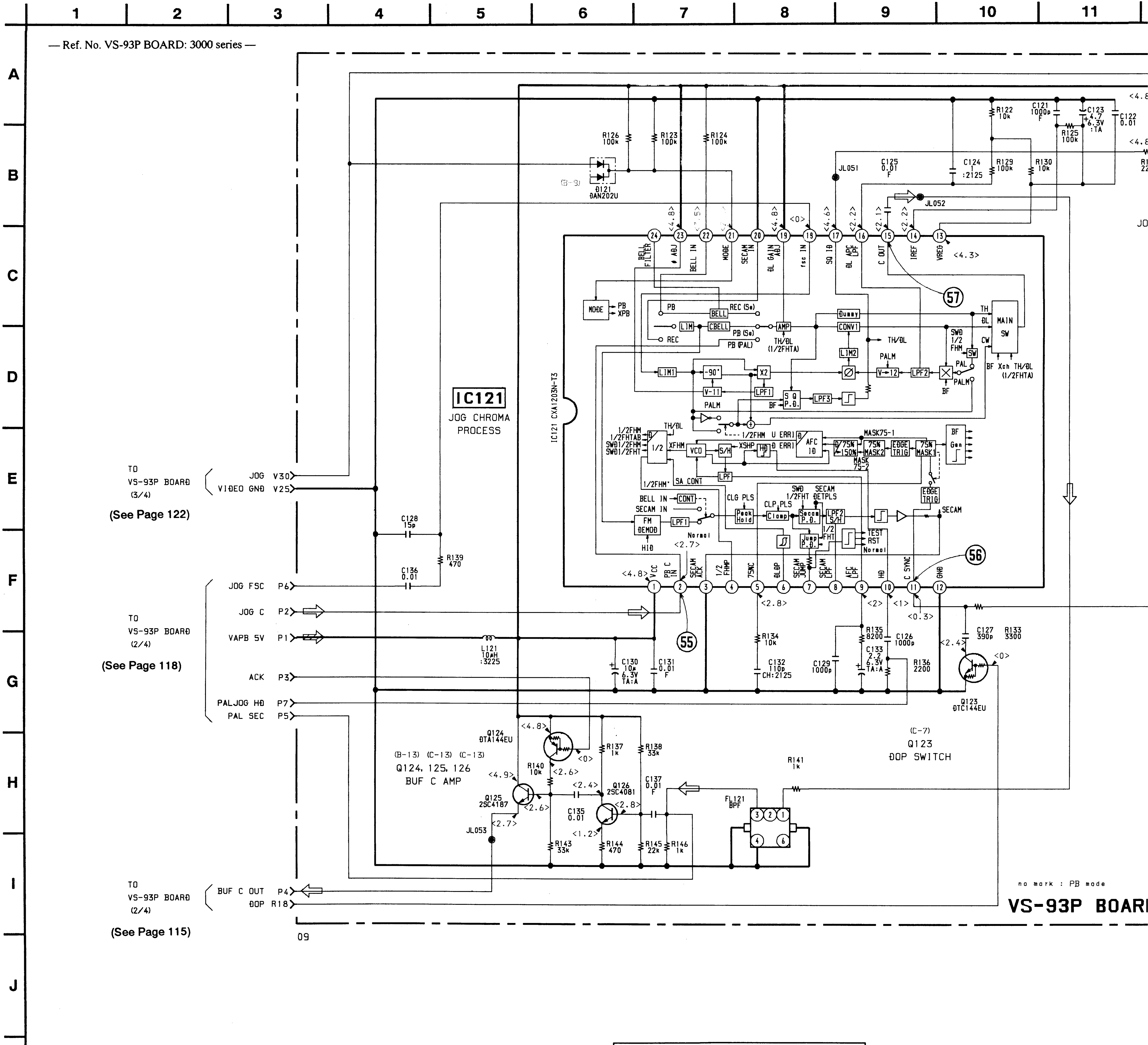
	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo	➤»		▷»
Capstan servo (speed and phase)		▷»	
Ref. signal	➤	▷	▷

VS-93P BOARD (2/4)



VS-93P (PAL JOG) SCHEMATIC DIAGRAM

• Refer to page 108 for Printed Wiring Board.



— Ref. No. VS-93P BOARD: 3000 series —

1
2
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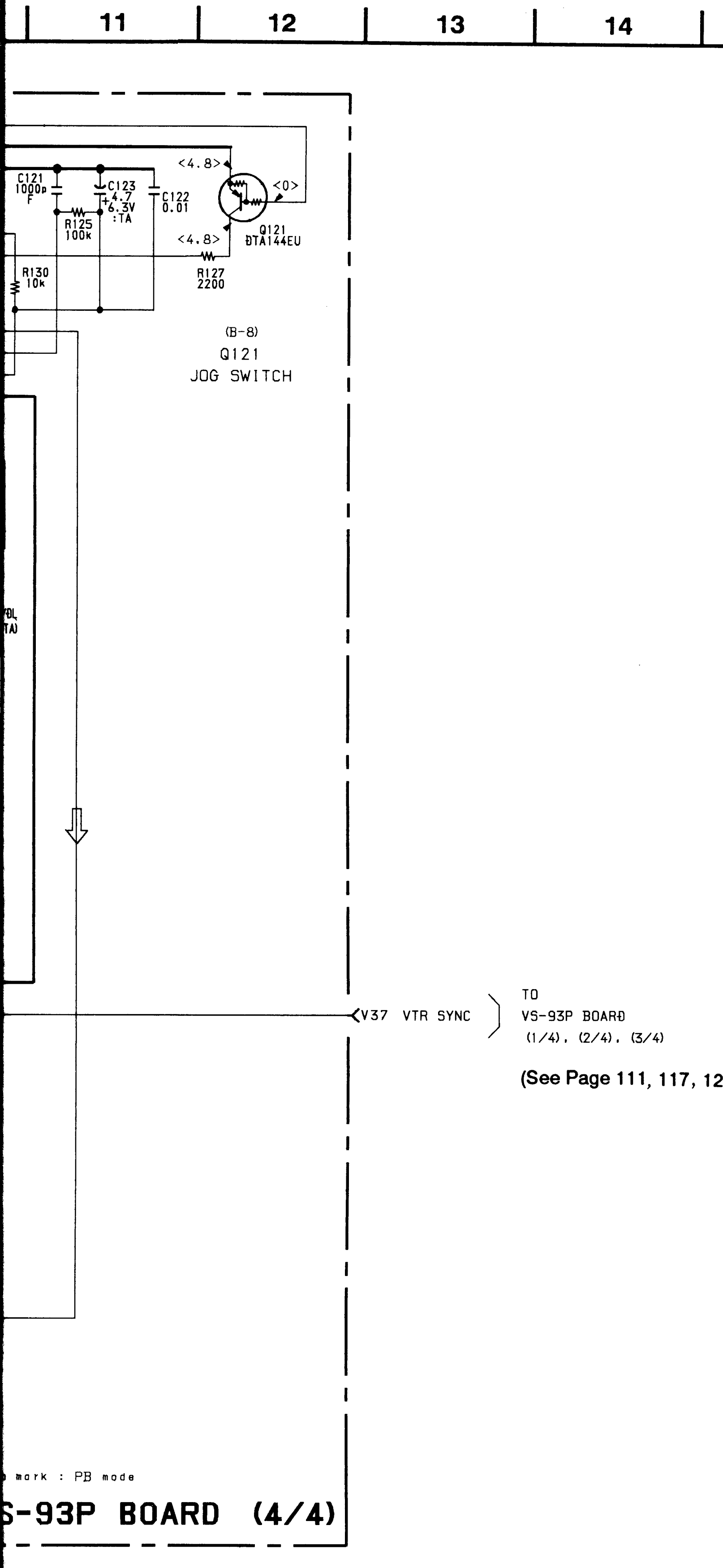
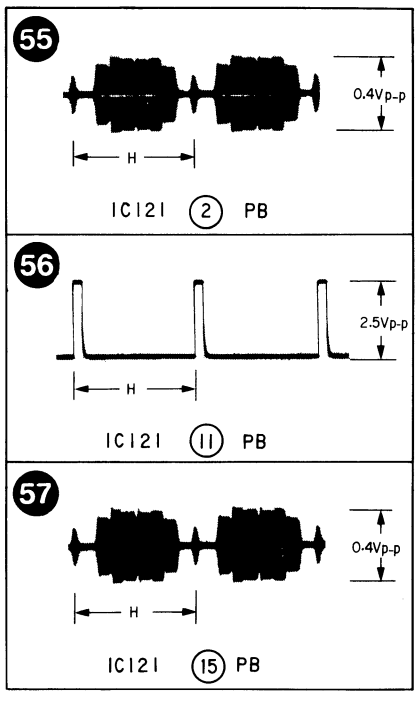
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
TO VS-93P BOARD (3/4)
(See Page 122)
JOG V30
VIDEO GND V25
TO VS-93P BOARD (2/4)
(See Page 118)
JOG FSC P6
JOG C P2
VAPB 5V P1
ACK P3
PALJOG HD P7
PAL SEC P5
TO VS-93P BOARD (2/4)
(See Page 115)
BUF C OUT P4
DOP R18
IC121
JOG CHROMA PROCESS
IC121 CXA1203N-T3
Q121 DAN202U
R126 100k
R123 100k
R124 100k
R122 10k
C121 1000p F
C123 4.7 6.3V :TA
C122 0.01
R125 100k
C125 0.01 F
C124 :2125
R129 100k
R130 10k
JL051
JL052
<4.3>
57
56
55
MAIN SW
MODE
L121 10μH :3225
C128 15p
C136 0.01
R139 470
C130 10μ 6.3V TA:A
C131 0.01 F
R134 10k
C132 110p CH:2125
C129 1000p
R135 8200
C133 2.2 6.3V TA:A
C126 1000p
R136 2200
C127 390p
R133 3300
Q123 DTC144EU
(C-7) Q123 DOP SWITCH
Q124 DTA144EU
(B-13) (C-13) (C-13)
Q124, 125, 126 BUF C AMP
R140 10k
Q125 2SC4187
JL053
R137 1k
R138 33k
Q126 2SC4081
C135 0.01
C137 0.01 F
R143 33k
R144 470
R145 22k
R146 1k
R141 1k
FL121 BPF
no mark : PB mode
VS-93P BOARD
09


11
12
13
14
15
C121
1000p
F
C123
4.7
6.3V
:TA
C122
0.01
R125
100k
<4.8>
<4.8>
<0>
Q121
DTA144EU
R127
2200
R130
10k
(B-8)
Q121
JOG SWITCH
V37 VTR SYNC
TO
VS-93P BOARD
(1/4), (2/4), (3/4)
mark : PB mode
S-93P BOARD (4/4)

(See Page 111, 117, 122)

VS-93P BOARD (4/4)



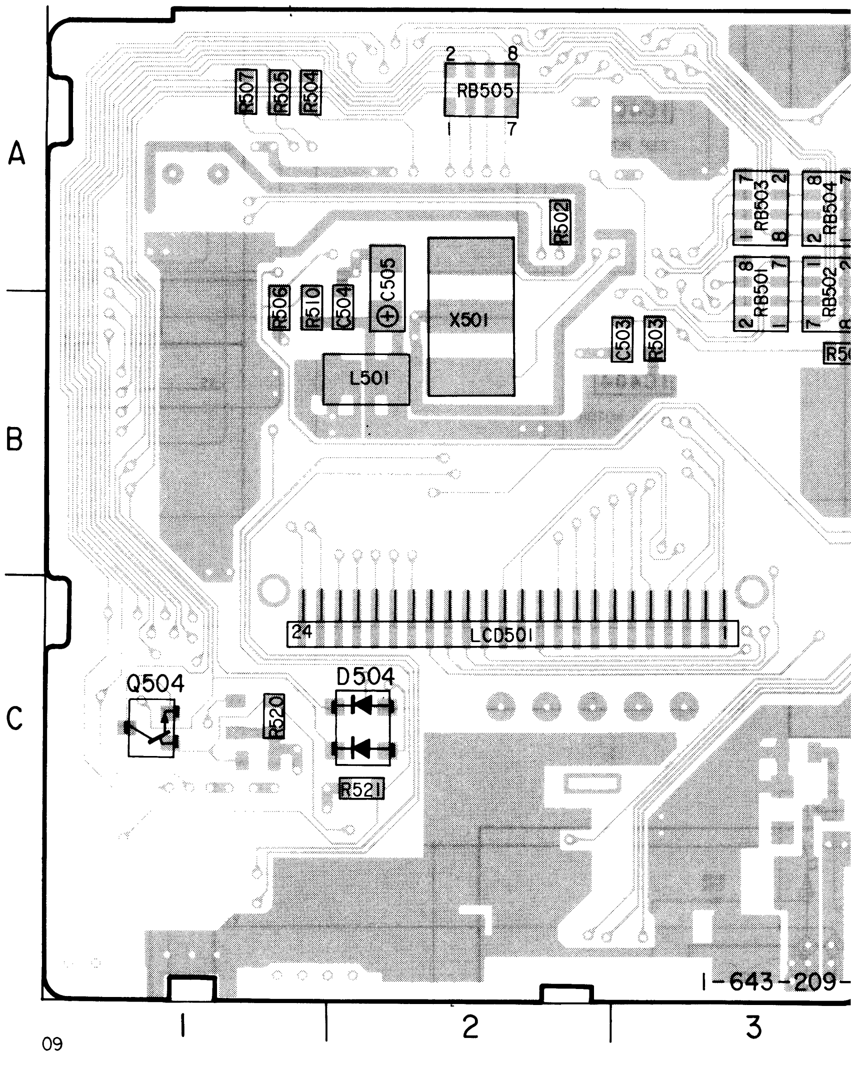
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB	⇨			

LC-40P (LCD CONTROL), CN-64P (BOARD LINK) PRINTED WIRING BOARDS

— Ref. No. LC-40P BOARD: 4000 series, CN-64P BOARD: 1000 series —

LC-40P BOARD (COMPONENT SIDE)


A
B
C
1
2
3
09
R507
R505
R504
RB505
2
8
1
7
R502
RB503
RB504
RB501
RB502
R506
R510
C504
C505
X501
L501
C503
R503
24
LCD501
1
Q504
R520
D504
R521
1-643-209-

< DIODE >

D501	8-719-421-27	DIODE	MA728
D504	8-719-940-45	DIODE	DWA010
D505	8-719-988-62	DIODE	1SS355

< IC >

IC501	8-759-059-51	IC	uPD75316GF-SGX3200
IC502	8-759-056-84	IC	S-8420AF
IC503	8-759-145-63	IC	uPD7564G-540

< TRANSISTOR >

Q501	8-729-905-15	TRANSISTOR	DTC144WU
Q502	8-729-905-12	TRANSISTOR	DTA144EU
Q504	8-729-905-XX	TRANSISTOR	DTC114TU

- **For printed wiring boards.**
- LC-40P, CN-64P boards are the printed wiring board four layers structure but inner two layers' patterns are
- ● : Through hole is omitted.

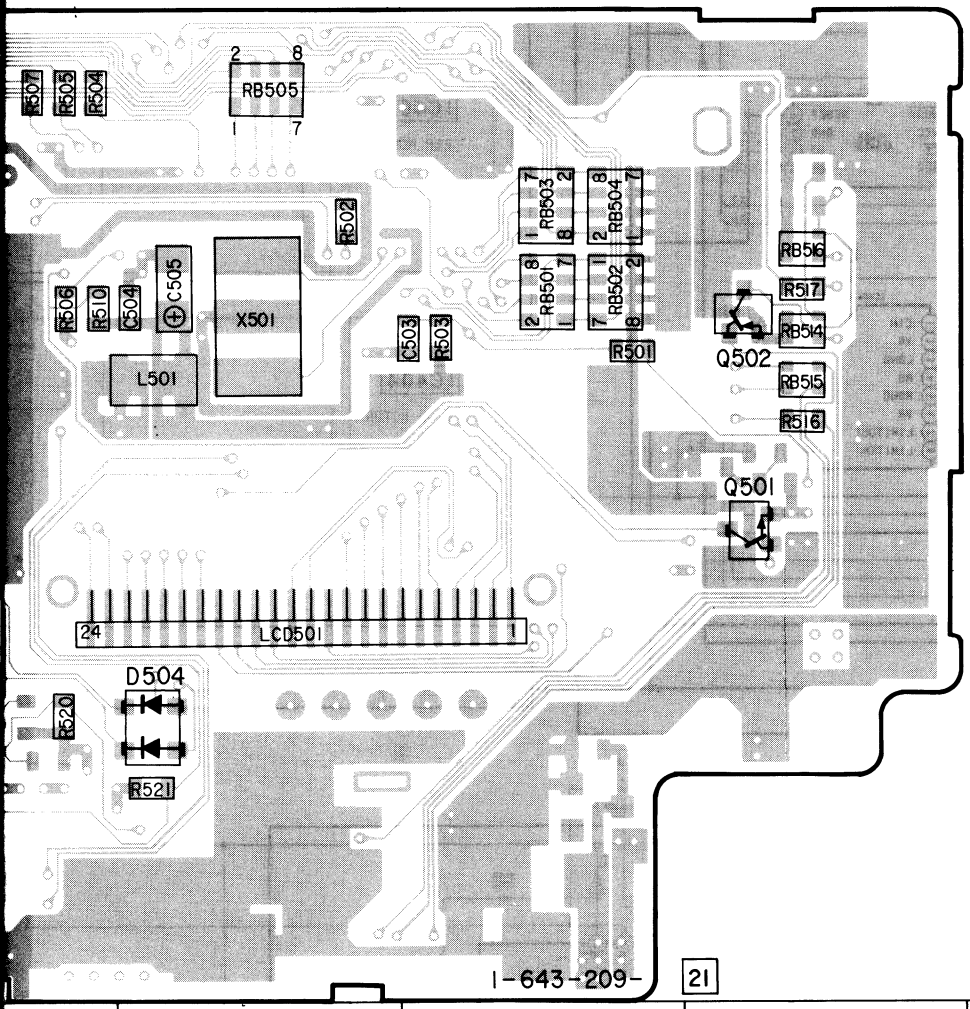
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side s the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen parts face are indicated.

-64P (BOARD LINK) PRINTED WIRING BOARDS

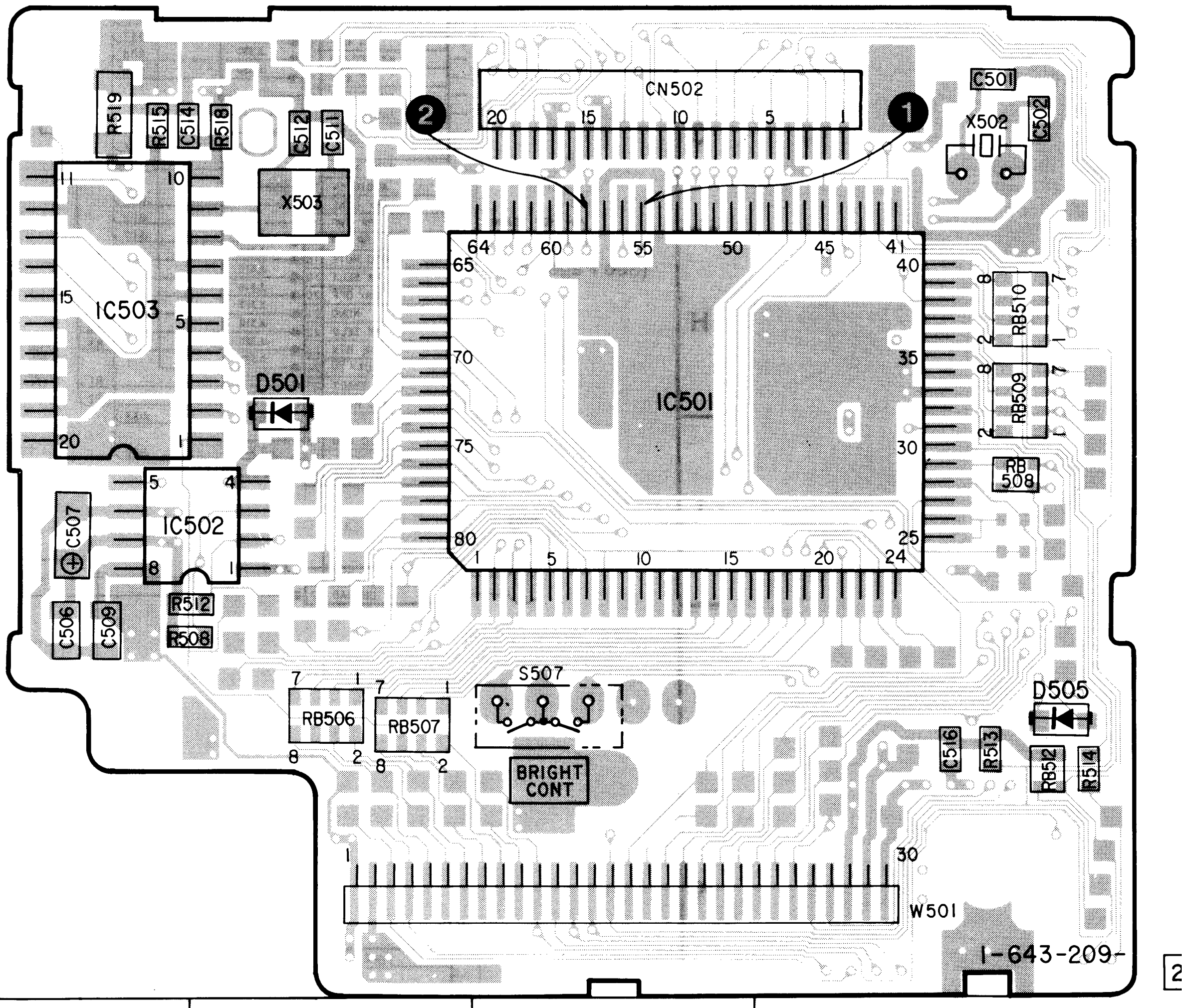
s, CN-64P BOARD: 1000 series —

OARD (COMPONENT SIDE)



R507
R505
R504
RB505
2 8
1 7
R502
RB503
RB504
RB501
RB502
RB516
R517
RB514
RB515
R516
Q502
R501
Q501
R506
R510
C504
C505
X501
L501
C503
R503
LCD501
24
1
D504
R520
R521
1-643-209-
21

LC-40P BOARD (CONDUCTOR SIDE)



CN502
20 15 10 5 1
②
①
C501
X502
C502
R519
R515
C514
R518
C512
C511
X503
IC503
11 10
15 5
20 1
D501
IC502
5 4
8 1
C507
C506
C509
R512
R508
IC501
64 60 55 50 45 41
65 40
70 35
75 30
80 25
1 5 10 15 20 24
RB510
RB509
RB 508
RB506
RB507
S507
BRIGHT CONT
D505
C516
R513
R512
R514
W501
1 30
1-643-209-

2 3 4 5 6 7 8

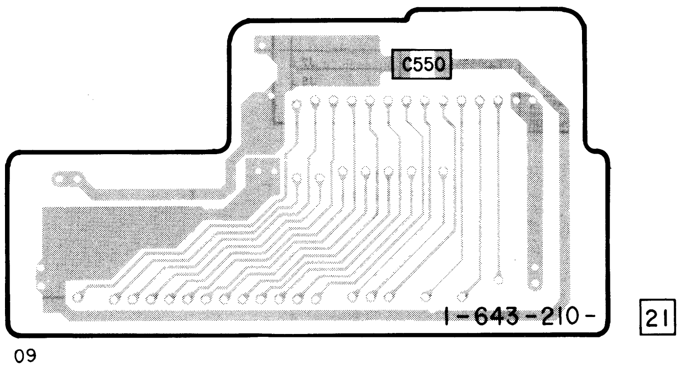
X3200

- **For printed wiring boards.**
- LC-40P, CN-64P boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

144WU
144EU
114TU

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

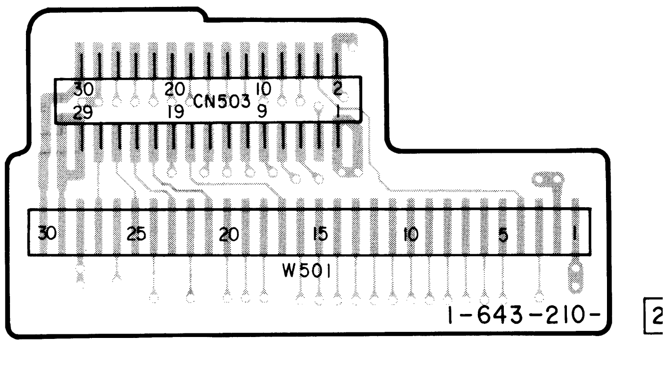
CN-64P BOARD (COMPONENT SIDE)



C550
1-643-210-
21

09

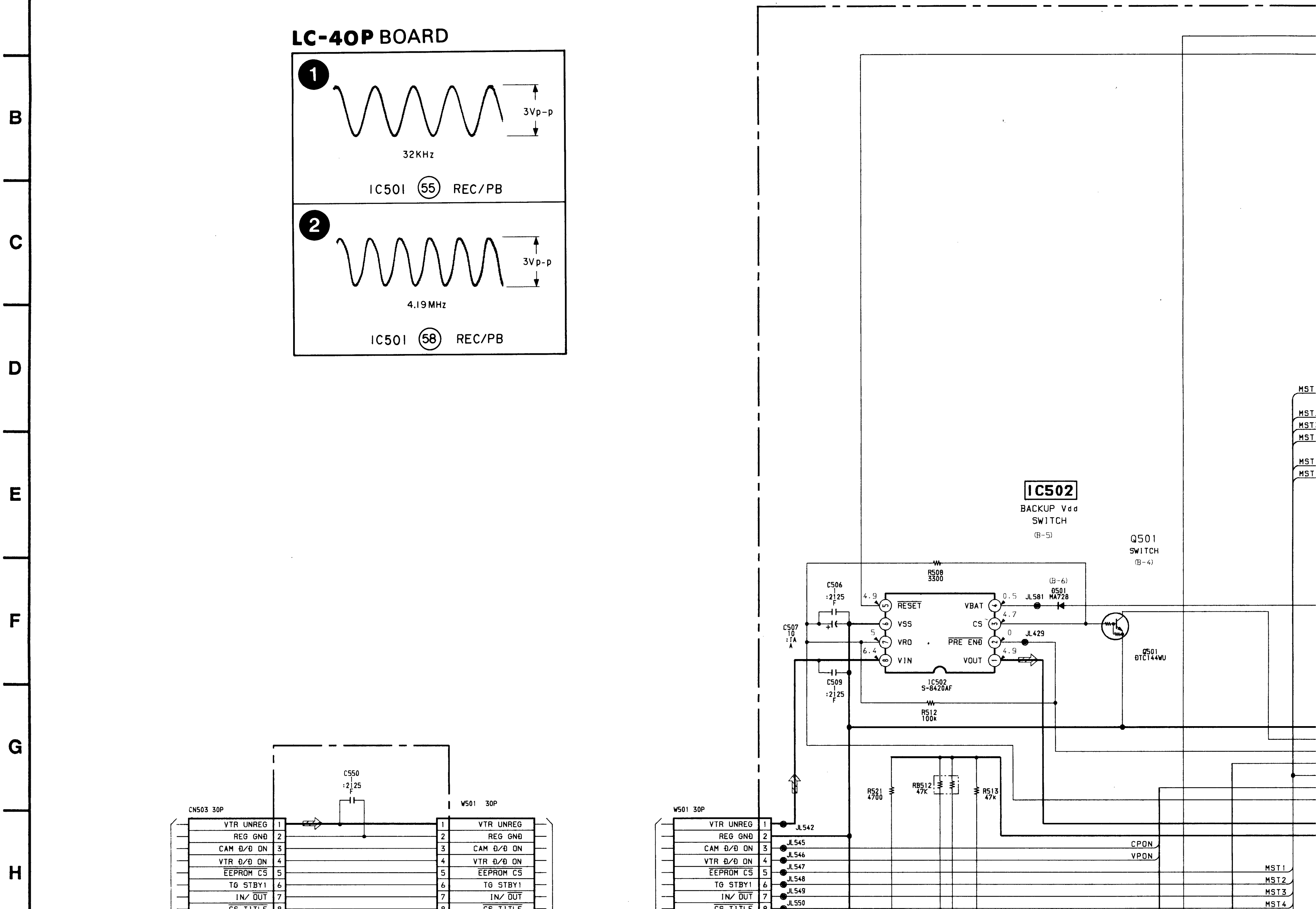
CN-64P BOARD (CONDUCTOR SIDE)



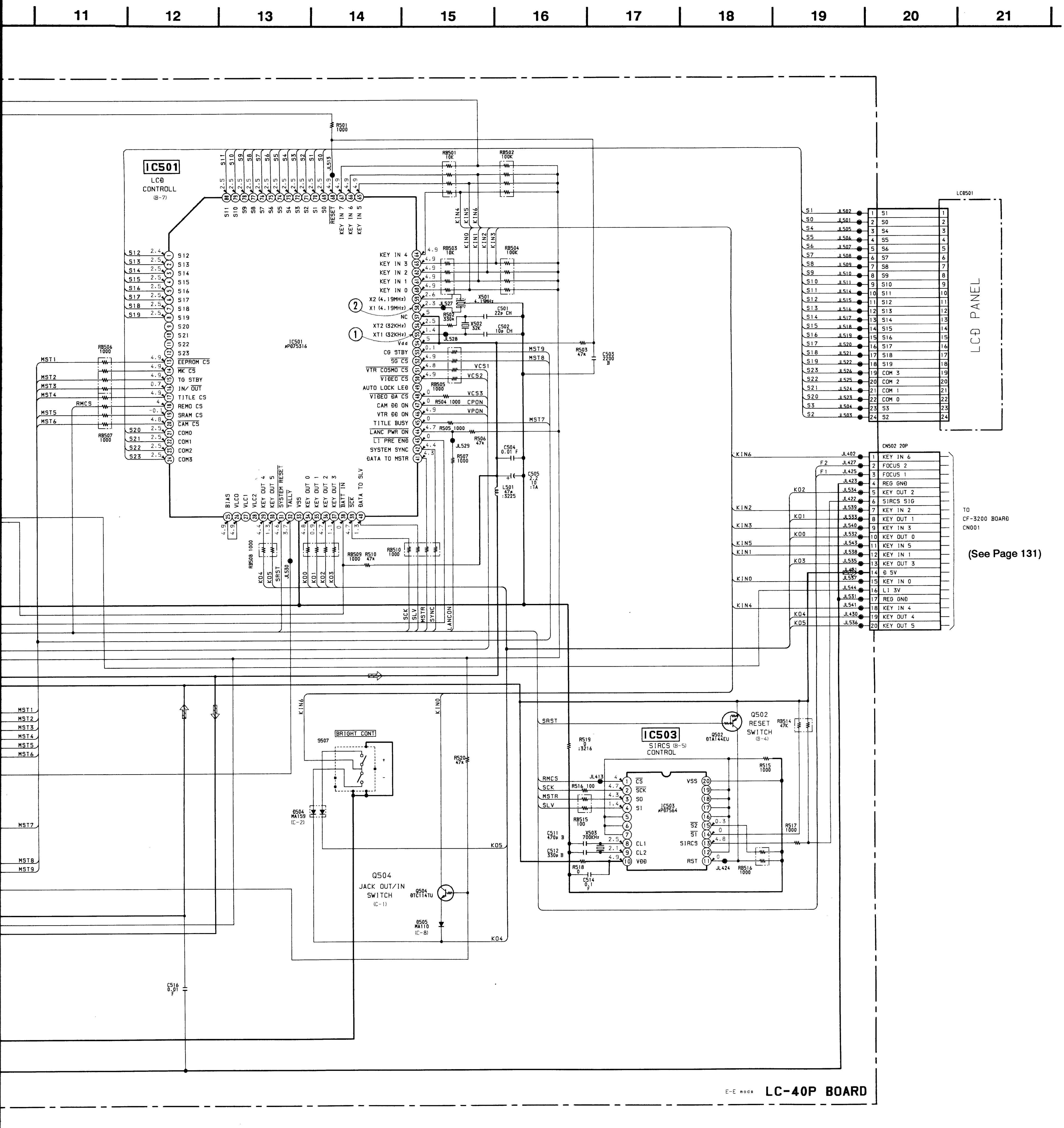
30 20 10 2
29 19 9 1
CN503
30 25 20 15 10 5 1
W501
1-643-210-

LC-40P (LCD CONTROL), CN-64P (BOARD LINK) SCHEMATIC DIAGRAMS

— Ref. No. LC-40P BOARD: 4000 series, CN-64P BOARD: 1000 series —



LC-40P BOARD
1
3Vp-p
32KHz
IC501 (55) REC/PB
2
3Vp-p
4.19MHz
IC501 (58) REC/PB
IC502
BACKUP Vdd SWITCH
(B-5)
Q501
SWITCH
(B-4)
R508 3300
C506 :2|25 F
C507 10 :TA A
C509 :2|25 F
RESET
VSS
VRO
VIN
VBAT
CS
PRE ENB
VOUT
4.9
5
6.4
0.5
4.7
0
4.9
JL581
D501 MA728
JL429
IC502 S-8420AF
R512 100k
Q501 DTC144WU
R521 4700
RB512 47K
R513 47k
R514 0
C550 :2|25
CN503 30P
W501 30P
W501 30P
TO VS-93P BOARD CN401
(See Page 120)
VTR UNREG
REG GND
CAM B/B ON
VTR B/B ON
EEPROM CS
TG STBY1
IN/ OUT
CS TITLE
CS SRAM
CS CAM
SYSTEM RESET
TALLY
SCK
DATA TO SLAVE
DATA TO MSTR
PB V
LANC PER ON
TITLE BUSY
VIDEO DA CS
VIDEO CS
VTR COSMO CS
CS SG
STB CRTC
CC LOCK
JACK OUT/ IN
FOCUS 1
FOCUS 2
B5
EVER 5V
BACK UP VDD
JL542
JL545
JL546
JL547
JL548
JL549
JL550
JL401
JL403
JL404
JL405
JL406
JL407
JL408
JL409
JL410
JL411
JL412
JL414
JL415
JL416
JL417
JL418
JL420
JL426
JL428
CPON
VPON
MST1
MST2
MST3
MST4
MST5
MST6
SRST
SCK
SLV
MSTR
SYNC
LANCON
MST7
VCS3
VCS2
VCS1
MST8
MST9
F1
F2
CN-64P BOARD
W505
09

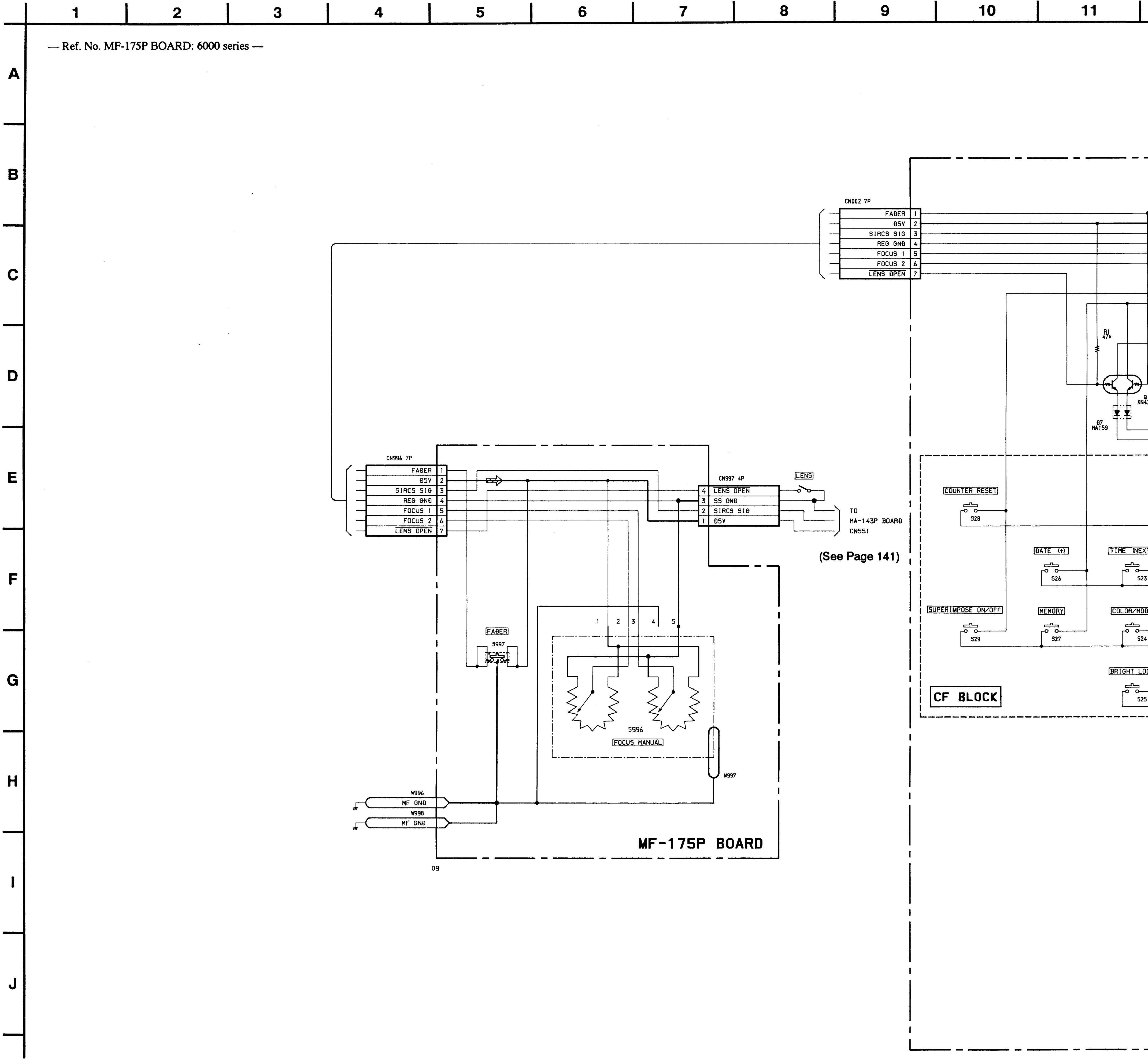


11
12
13
14
15
16
17
18
19
20
21
IC501
LCD CONTROLL
(B-7)
IC501 μPD75316
IC503
SIRCS (B-5) CONTROL
IC503 μPD7564
Q502
RESET SWITCH
(B-4)
Q502 DTA144EU
Q504
JACK OUT/IN SWITCH
(C-1)
Q504 DTC114TU
D504 MA159 (C-2)
D505 MA110 (C-8)
S507
BRIGHT CONT
LCD PANEL
LCD501
CN502 20P
TO CF-3200 BOARD CN001
KEY IN 6
FOCUS 2
FOCUS 1
REG GND
KEY OUT 2
SIRCS SIG
KEY IN 2
KEY OUT 1
KEY IN 3
KEY OUT 0
KEY IN 5
KEY IN 1
KEY OUT 3
D 5V
KEY IN 0
L1 3V
REG GND
KEY IN 4
KEY OUT 4
KEY OUT 5
X501 4.19MHz
X502 32K
X503 700KHz
EEPROM CS
MK CS
TG STBY
IN/OUT
TITLE CS
REMO CS
SRAM CS
CAM CS
COM0
COM1
COM2
COM3
CG STBY
SG CS
VTR COSMO CS
VIDEO CS
AUTO LOCK LED
VIDEO DA CS
CAM DD ON
VTR DD ON
TITLE BUSY
LANC PWR ON
L1 PRE END
SYSTEM SYNC
DATA TO MSTR

(See Page 131)

E-E mode **LC-40P BOARD**

CF-3200 (FUNCTION SWITCH), MF-175P (FOCUS SWITCH) SCHEMATIC DIAGRAMS



— Ref. No. MF-175P BOARD: 6000 series —

(See Page 141)

1
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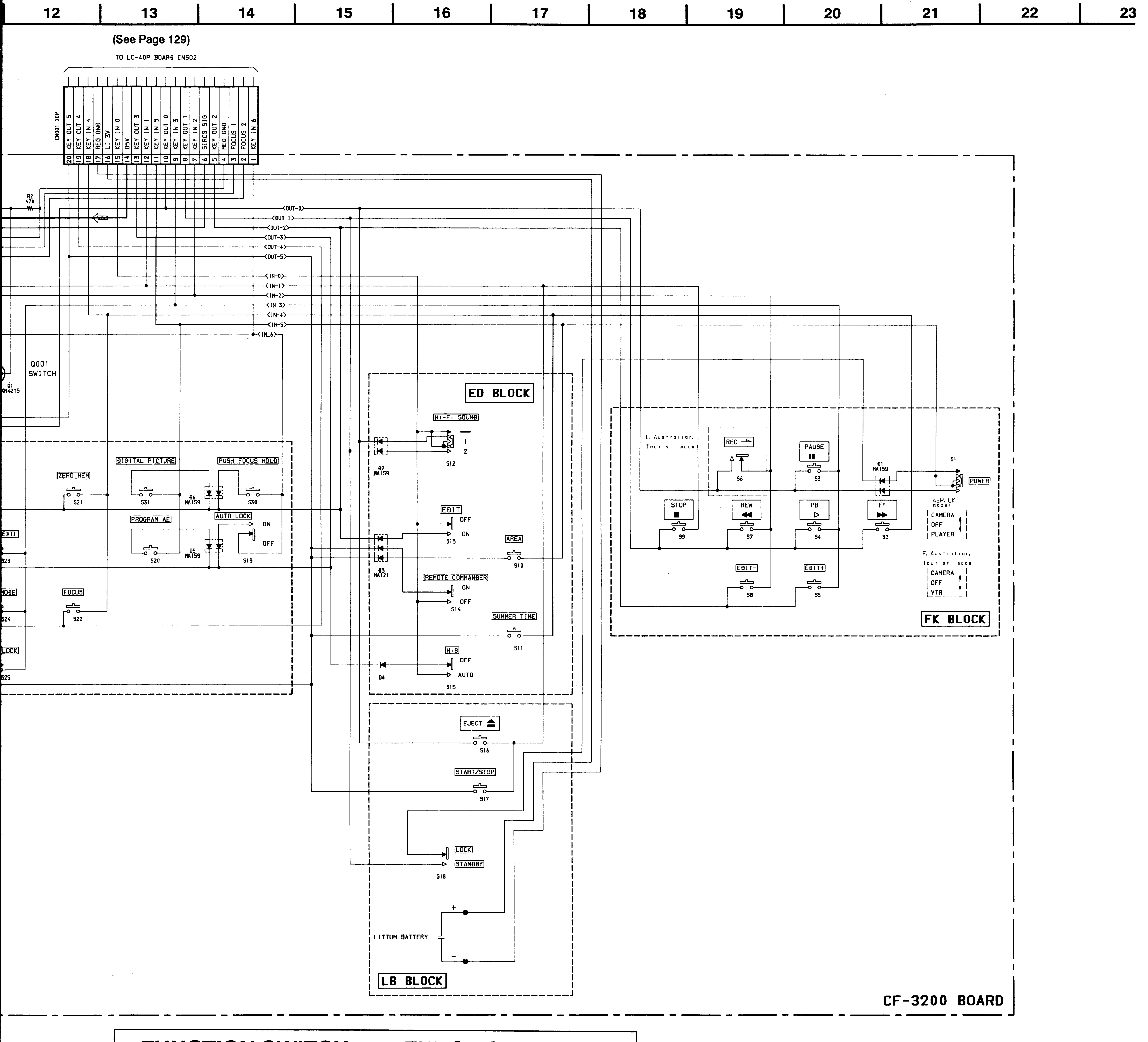
10
11
A
B
C
D
E
F
G
H
I
J
CN002 7P
FADER 1
Ð5V 2
SIRCS SIG 3
REG GNÐ 4
FOCUS 1 5
FOCUS 2 6
LENS OPEN 7
R1
47k
Q
XN4
D7
MA159
CN996 7P
FADER 1
Ð5V 2
SIRCS SIG 3
REG GNÐ 4
FOCUS 1 5
FOCUS 2 6
LENS OPEN 7
CN997 4P
4 LENS OPEN
3 SS GNÐ
2 SIRCS SIG
1 Ð5V
LENS
TO
MA-143P BOARÐ
CN551
COUNTER RESET
S28
DATE (+)
S26
TIME (NEX
S23
SUPERIMPOSE ON/OFF
S29
MEMORY
S27
COLOR/MOÐ
S24
BRIGHT LO
S25
CF BLOCK
FAÐER
S997
1
2
3
4
5
S996
FOCUS MANUAL
W997
W996
MF GNÐ
W998
MF GNÐ
MF-175P BOARD
09


12
13
14
15
16
17
18
19
20
21
22
23
(See Page 129)
TO LC-40P BOARD CN502
CN001 20P
20 KEY OUT 5
19 KEY OUT 4
18 KEY IN 4
17 REG GND
16 LI 3V
15 KEY IN 0
14 D5V
13 KEY OUT 3
12 KEY IN 1
11 KEY IN 5
10 KEY OUT 0
9 KEY IN 3
8 KEY OUT 1
7 KEY IN 2
6 SIRCS SIG
5 KEY OUT 2
4 REG GND
3 FOCUS 1
2 FOCUS 2
1 KEY IN 6
R2 47k
OUT-0
OUT-1
OUT-2
OUT-3
OUT-4
OUT-5
IN-0
IN-1
IN-2
IN-3
IN-4
IN-5
IN-6
Q001 SWITCH
Q1 XN4215
ZERO MEM
S21
DIGITAL PICTURE
S31
D6 MA159
PUSH FOCUS HOLD
S30
PROGRAM AE
S20
D5 MA159
AUTO LOCK
ON
OFF
S19
EXT)
S23
MODE
FOCUS
S22
S24
LOCK
S25
ED BLOCK
HI-FI SOUND
1
2
S12
D2 MA159
EDIT
OFF
ON
S13
D3 MA121
AREA
S10
REMOTE COMMANDER
ON
OFF
S14
SUMMER TIME
S11
HIB
OFF
AUTO
D4
S15
EJECT ⏏
S16
START/STOP
S17
LOCK
STANDBY
S18
LITTUM BATTERY
+
-
LB BLOCK
E, Australian, Tourist model
REC
S6
PAUSE
S3
D1 MA159
S1
POWER
STOP
S9
REW
S7
PB
S4
FF
S2
AEP, UK model
CAMERA
OFF
PLAYER
EDIT-
S8
EDIT+
S5
E, Australian, Tourist model
CAMERA
OFF
VTR
FK BLOCK
CF-3200 BOARD

FUNCTION SWITCH

FUNCTION SWITCH

MF-175P (FOCUS SWITCH) PRINTED WIRING BOARD

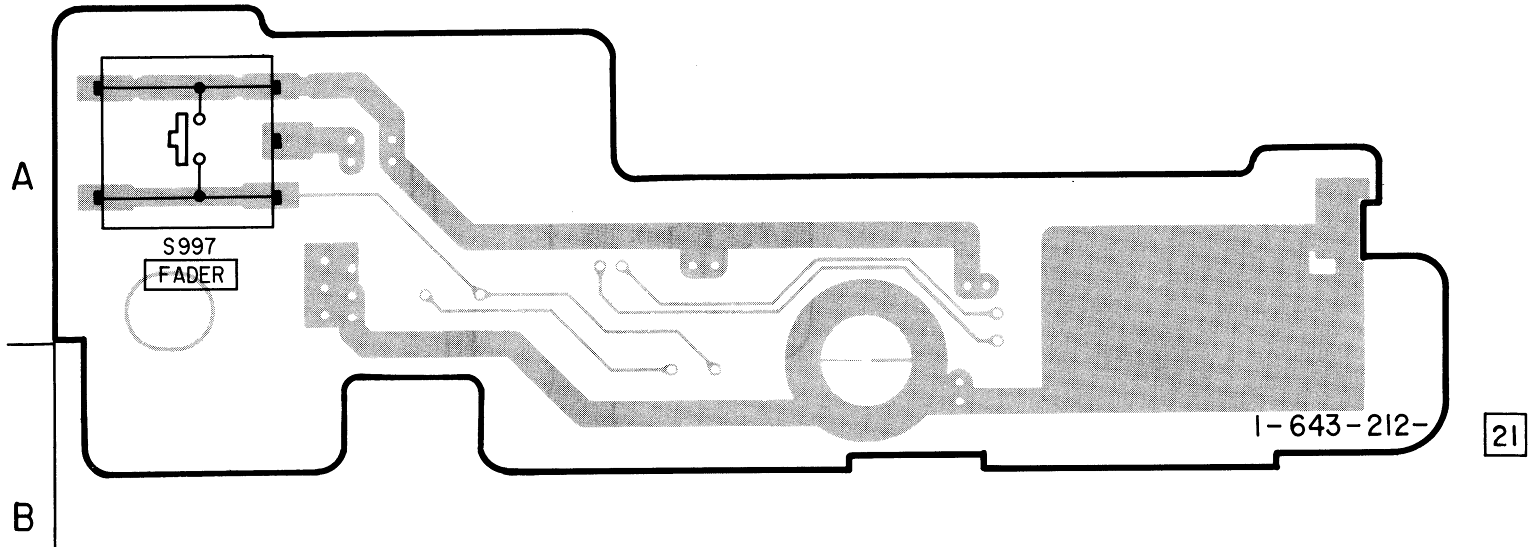
— Ref. No. MF-175P BOARD: 6000 series —

- CF-3200 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

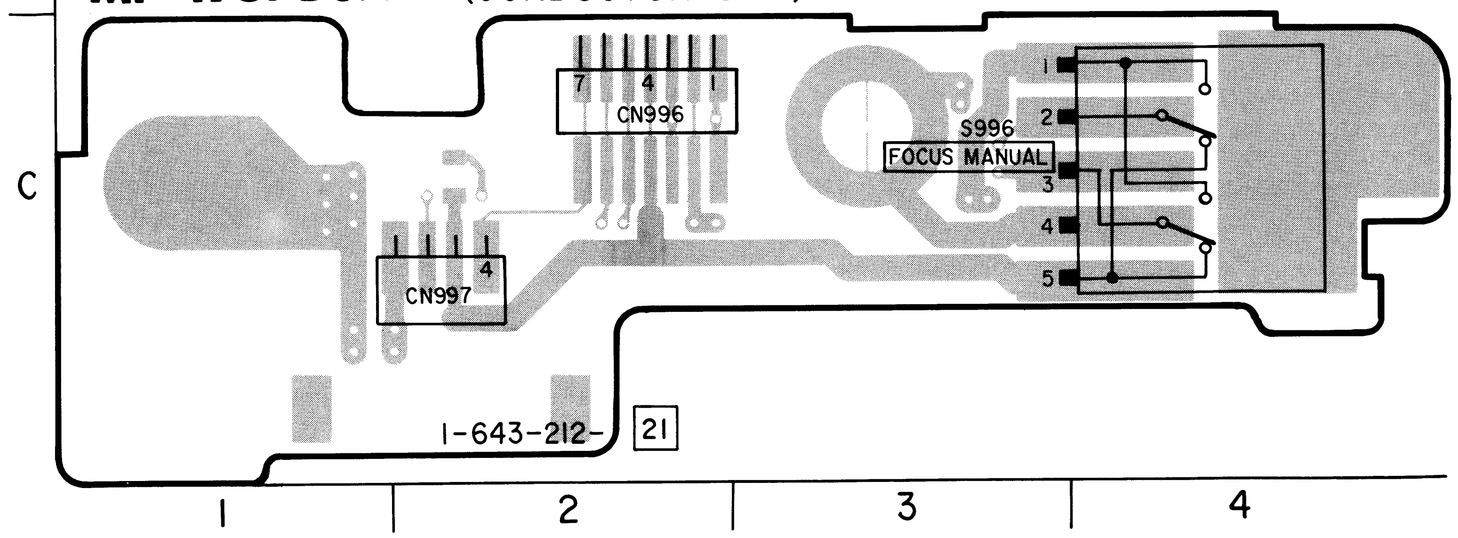
- **For printed wiring boards.**
- MF-175P board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

MF-175P BOARD (COMPONENT SIDE)


A
S997
FADER
1-643-212-
21
B

MF-175P BOARD (CONDUCTOR SIDE)


7
4
1
CN996
1
2
S996
FOCUS MANUAL
3
4
5
C
4
CN997
1-643-212-
21
1
2
3
4

LJ-9P (REMOTE CONTROL JACK), FP-115 (TAPE SENSOR) PRINTED WIRING BOARDS

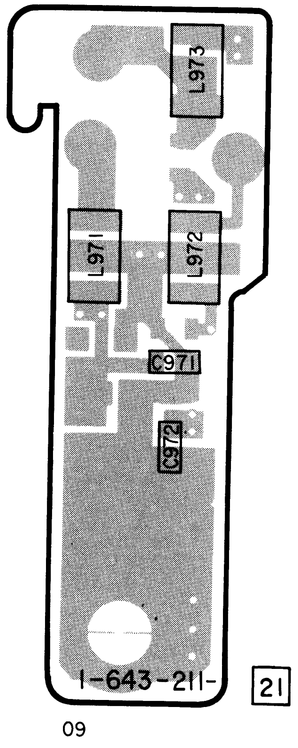
— Ref. No. LJ-9P BOARD: 5000 series, FP-115 BOARD: 8000 series —

- ZM-3200, JK-3100 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

< DIODE >

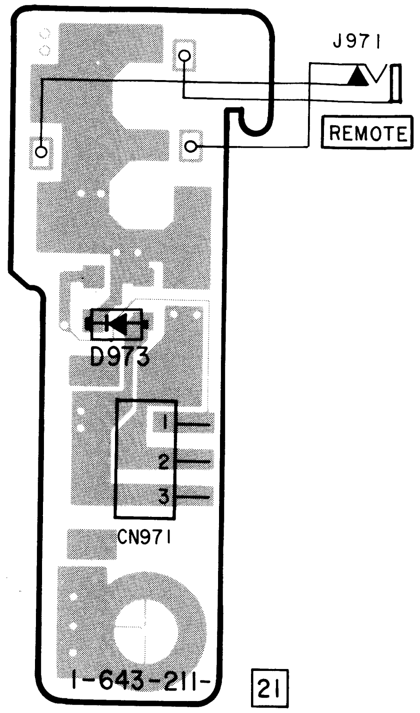
D973	8-719-988-62	DIODE	1SS355

LJ-9P BOARD
(COMPONENT SIDE)



L973
L971
L972
C971
C972
1-643-211-
21
09

LJ-9P BOARD
(CONDUCTOR SIDE)

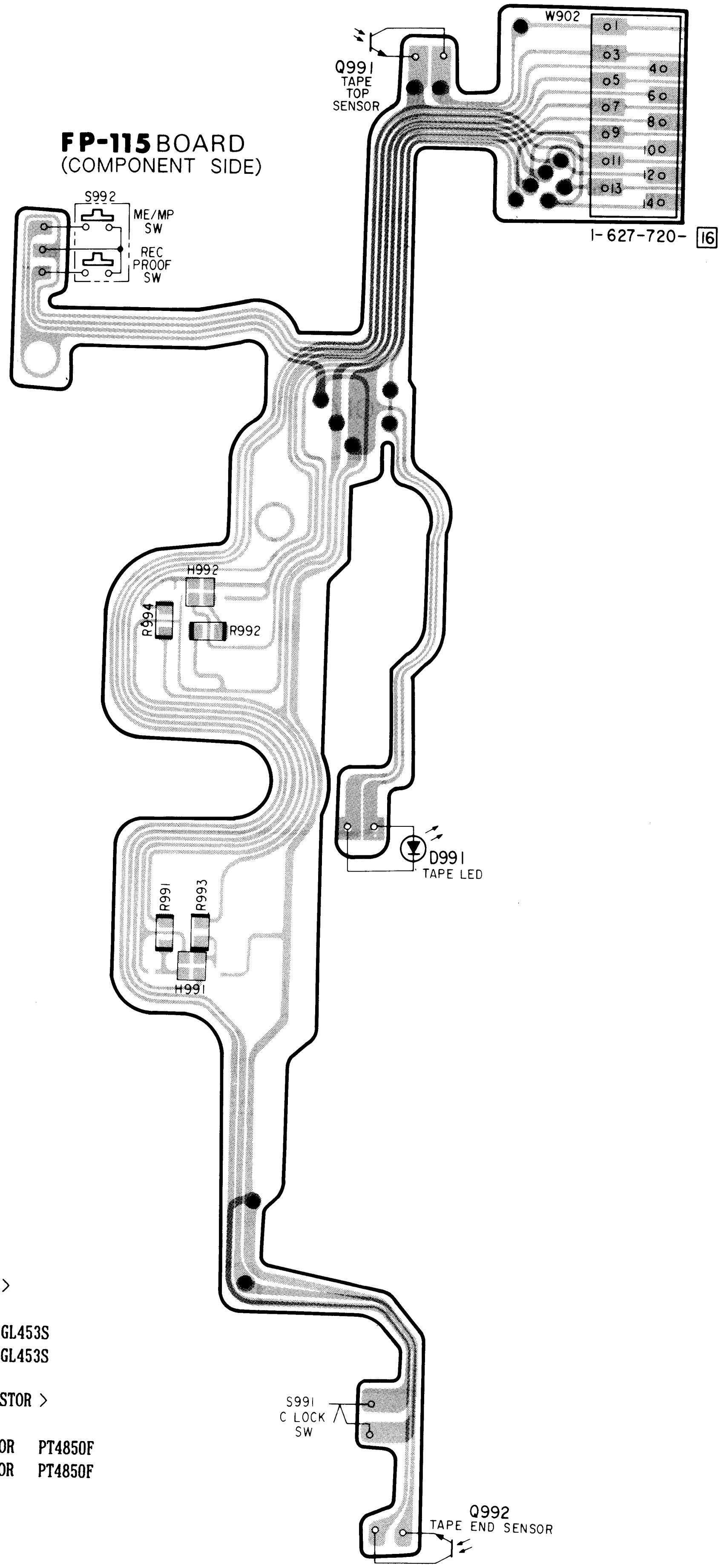


J971
REMOTE
D973
1
2
3
CN971
1-643-211-
21

- **For printed wiring boards.**
- LJ-9P board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

FP-115 BOARD
(COMPONENT SIDE)



W902
1
3
4
5
6
7
8
9
10
11
12
13
14
Q991
TAPE
TOP
SENSOR
1-627-720-
16
S992
ME/MP
SW
REC
PROOF
SW
H992
R994
R992
D991
TAPE LED
R991
R993
H991
S991
C LOCK
SW
Q992
TAPE END SENSOR

< DIODE >

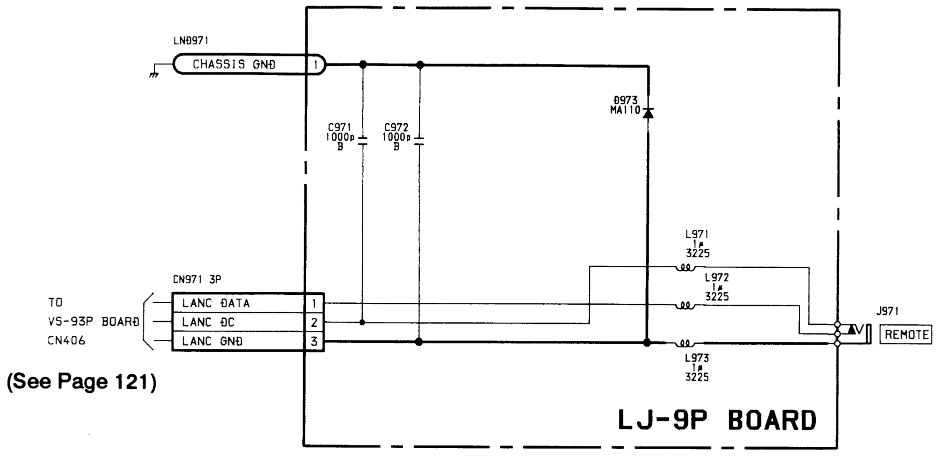
D991	8-719-988-42	DIODE	GL453S
D992	8-719-988-42	DIODE	GL453S

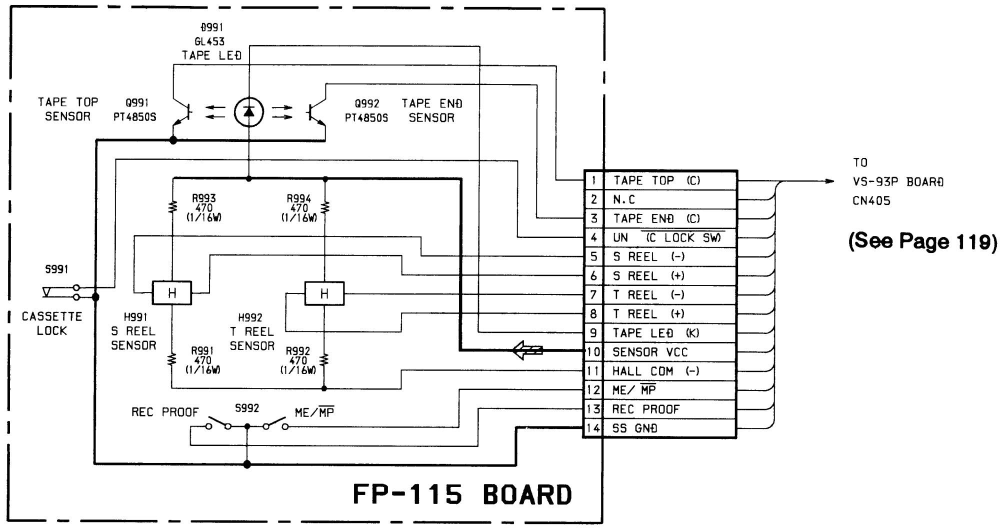
< TRANSISTOR >

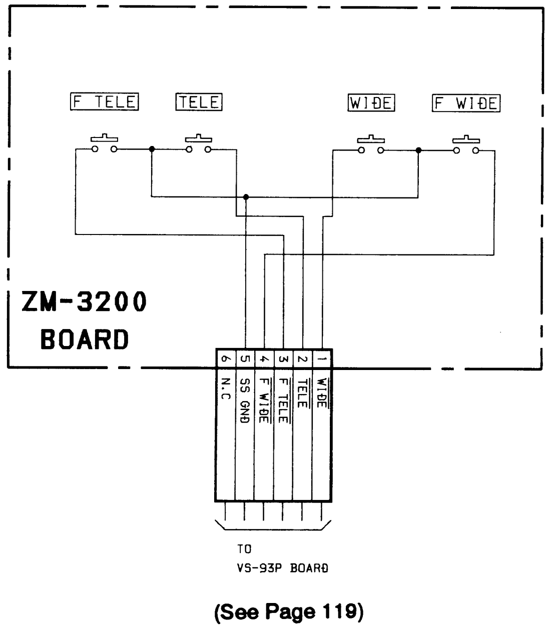
Q991	8-729-907-25	TRANSISTOR	PT4850F
Q992	8-729-907-25	TRANSISTOR	PT4850F

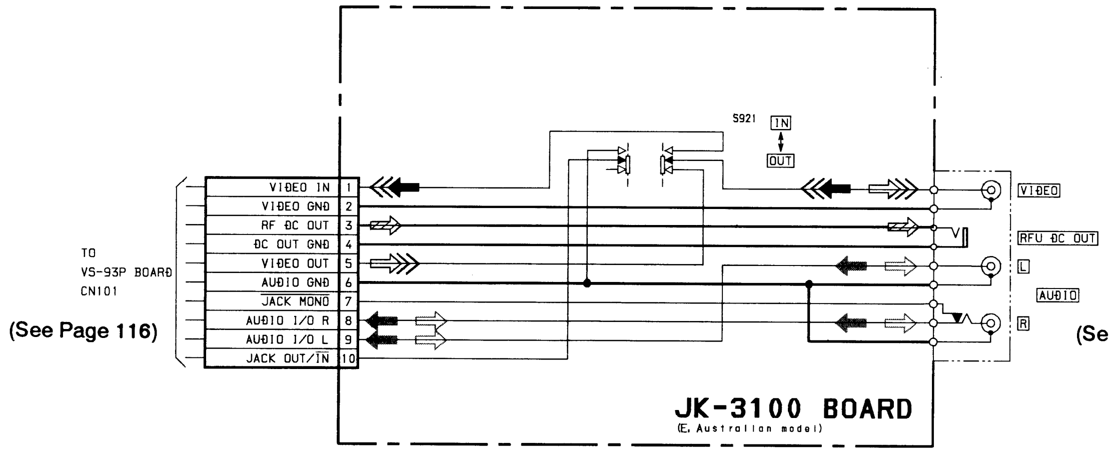
LJ-9P (REMOTE CONTROL JACK), FP-115 (TAPE SENSOR), ZM-3200 (ZOOM SWITCH), JK-3100 (VIDEO/AUDIO JACK) SCHEMATIC DIAGRAMS

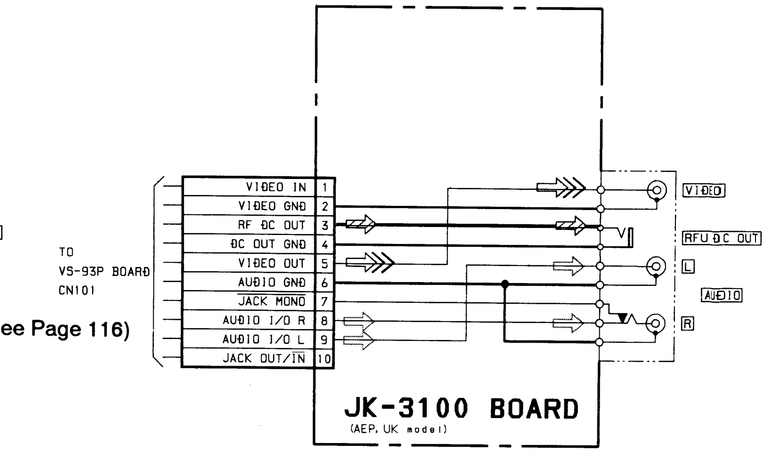
— Ref. No. LJ-9P BOARD: 5000 series, FP-115 BOARD: 8000 series —


LN0971
CHASSIS GND
C971 1000p B
C972 1000p B
D973 MA110
L971 1μ 3225
L972 1μ 3225
L973 1μ 3225
CN971 3P
1 LANC DATA
2 LANC DC
3 LANC GND
TO VS-93P BOARD CN406
(See Page 121)
J971
REMOTE
LJ-9P BOARD


D991 GL453 TAPE LED
TAPE TOP SENSOR
Q991 PT4850S
Q992 PT4850S
TAPE END SENSOR
R993 470 (1/16W)
R994 470 (1/16W)
S991
CASSETTE LOCK
H991 S REEL SENSOR
H992 T REEL SENSOR
R991 470 (1/16W)
R992 470 (1/16W)
REC PROOF
S992
ME/MP
1 TAPE TOP (C)
2 N.C
3 TAPE END (C)
4 UN (C LOCK SW)
5 S REEL (-)
6 S REEL (+)
7 T REEL (-)
8 T REEL (+)
9 TAPE LED (K)
10 SENSOR VCC
11 HALL COM (-)
12 ME/ MP
13 REC PROOF
14 SS GND
TO VS-93P BOARD CN405
(See Page 119)
FP-115 BOARD


F TELE
TELE
WIDE
F WIDE
ZM-3200 BOARD
1 WIDE
2 TELE
3 F TELE
4 F WIDE
5 SS GND
6 N.C
TO VS-93P BOARD
(See Page 119)


S921
IN
OUT
1 VIDEO IN
2 VIDEO GND
3 RF DC OUT
4 DC OUT GND
5 VIDEO OUT
6 AUDIO GND
7 JACK MONO
8 AUDIO I/O R
9 AUDIO I/O L
10 JACK OUT/IN
TO VS-93P BOARD CN101
(See Page 116)
VIDEO
RFU DC OUT
L
AUDIO
R
JK-3100 BOARD
(E, Australian model)


1 VIDEO IN
2 VIDEO GND
3 RF DC OUT
4 DC OUT GND
5 VIDEO OUT
6 AUDIO GND
7 JACK MONO
8 AUDIO I/O R
9 AUDIO I/O L
10 JACK OUT/IN
TO VS-93P BOARD CN101
(See Page 116)
VIDEO
RFU DC OUT
L
AUDIO
R
JK-3100 BOARD
(AEP, UK model)

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡≫	➡
PB			⇨≫	⇨

AU-135P (AUDIO), MA-143P (MIC AMP) PRINTED WIRING BOARDS

— Ref. No. AU-135P BOARD: 1000 series, MA-143P BOARD: 5000 series —

- **For printed wiring boards.**
- AU-135P, MA-143P boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

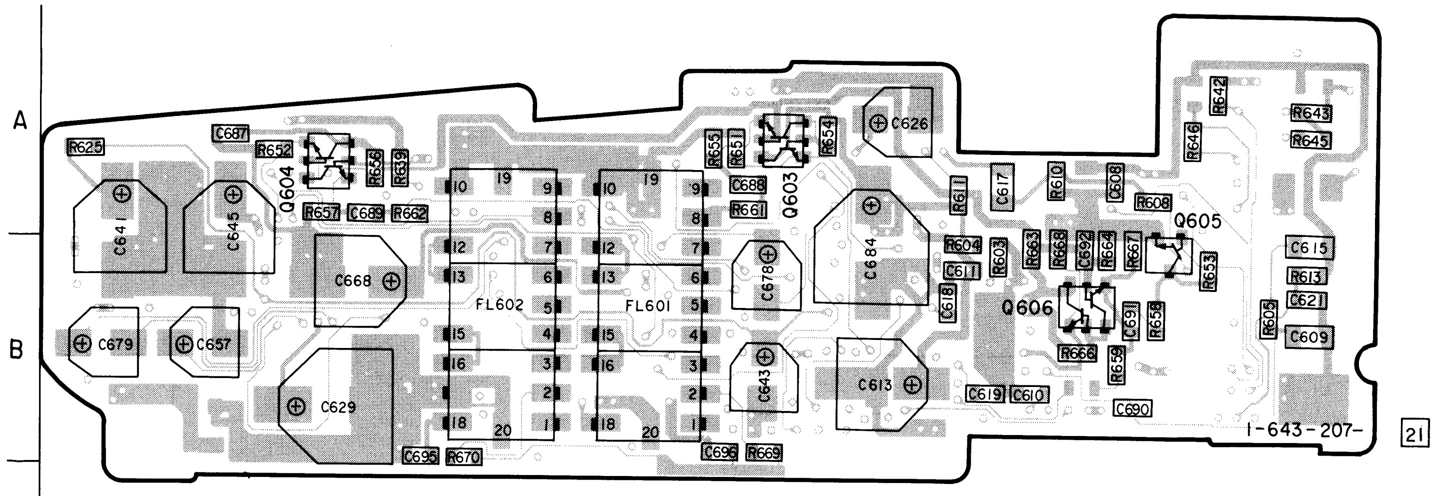
< IC >

IC601	8-759-823-19	IC	CXA1488RR
IC602	8-759-823-19	IC	CXA1488RR
IC603	8-759-823-21	IC	CXA1536QQ
IC604	8-759-509-05	IC	XRU4066BF

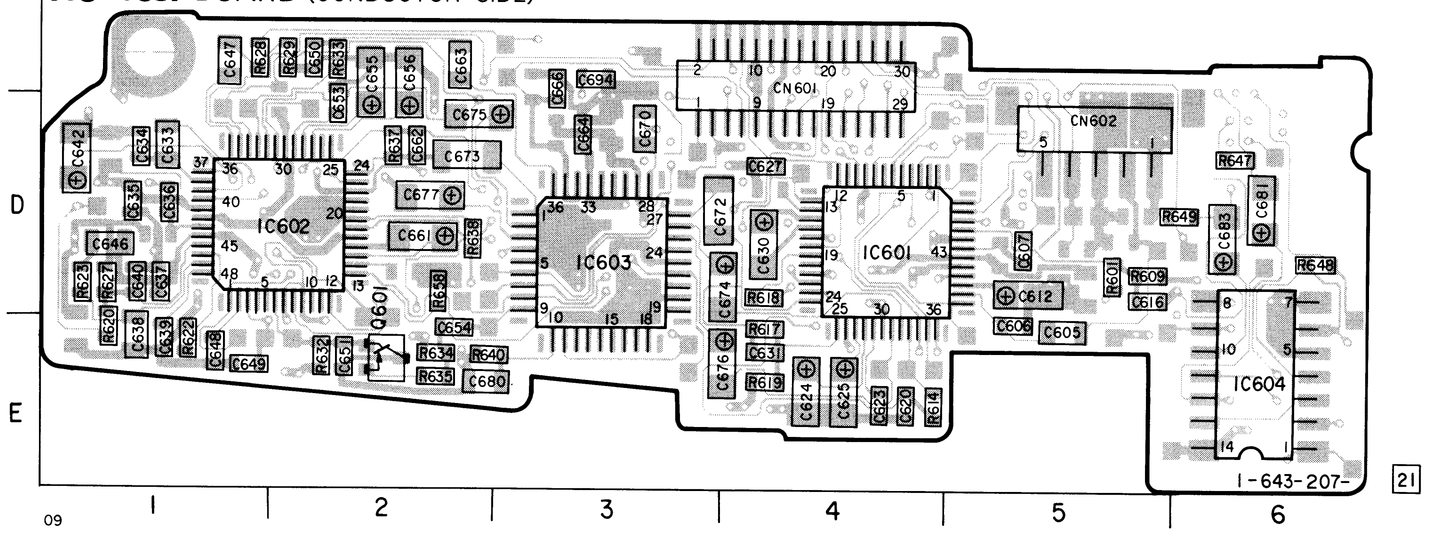
< TRANSISTOR >

Q601	8-729-823-00	TRANSISTOR	2SA1622-5. 6. 7
Q603	8-729-402-81	TRANSISTOR	XN4501
Q604	8-729-402-81	TRANSISTOR	XN4501
Q605	8-729-905-18	TRANSISTOR	DTC144EU
Q606	8-729-402-81	TRANSISTOR	XN4501

AU-135P BOARD (COMPONENT SIDE)


A
B
C625
C687
R652
Q604
R656
R639
R657
C689
R662
C641
C645
C668
C679
C657
C629
FL602
FL601
C695
R670
R655
R651
Q603
R654
C626
C688
R661
C678
C684
C643
C613
C696
R669
R611
C617
R610
C608
R646
R642
R643
R645
R608
Q605
R604
C611
R603
R663
R668
C692
R664
R667
R653
C615
R613
C621
C609
R605
C618
Q606
R666
C591
R658
R659
C619
C610
C690
1-643-207-
21

AU-135P BOARD (CONDUCTOR SIDE)


C
D
E
C647
R628
R629
C650
R633
C653
C655
C656
C663
C675
C666
C694
C670
C664
CN601
CN602
C642
C634
C633
C635
C636
C646
IC602
C637
R637
C662
C673
C677
C661
R638
IC603
C627
C672
C630
IC601
R601
R609
C616
C683
C681
R647
R649
R648
C607
C612
C606
C605
IC604
R623
R621
C640
C637
R620
C638
C639
R622
C648
C649
R632
C651
Q601
C654
R634
R640
R635
C680
C674
R618
R617
C631
C676
R619
C624
C625
C623
C620
R614
1-643-207-
21
09
1
2
3
4
5
6

< DIODE >

D551	8-719-404-46	DIODE	MA110
D552	8-719-404-46	DIODE	MA110

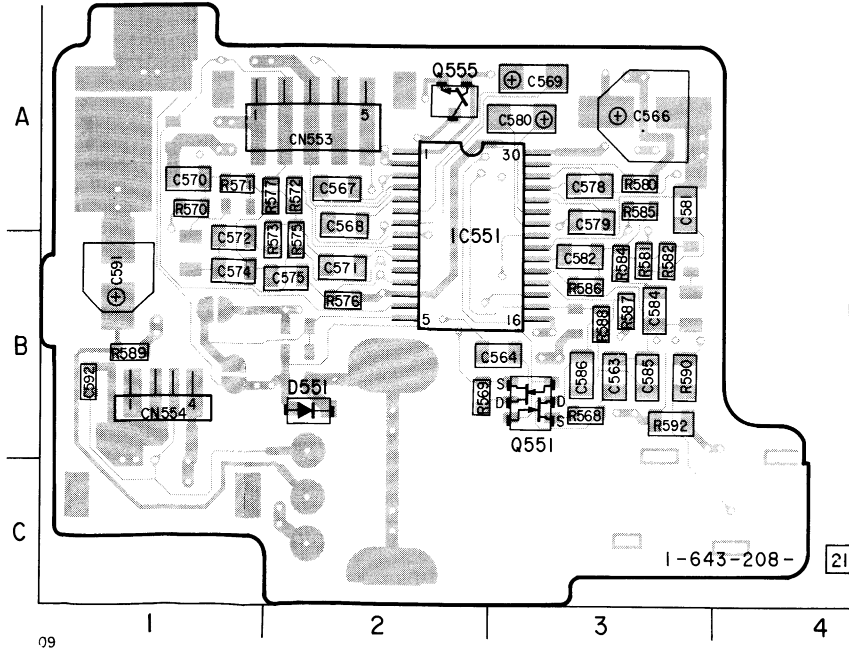
< IC >

IC551	8-759-062-23	IC	CXA-1618N-E2
IC552	8-741-100-63	IC	SBX1619-51
IC553	8-759-998-98	IC	LM358D

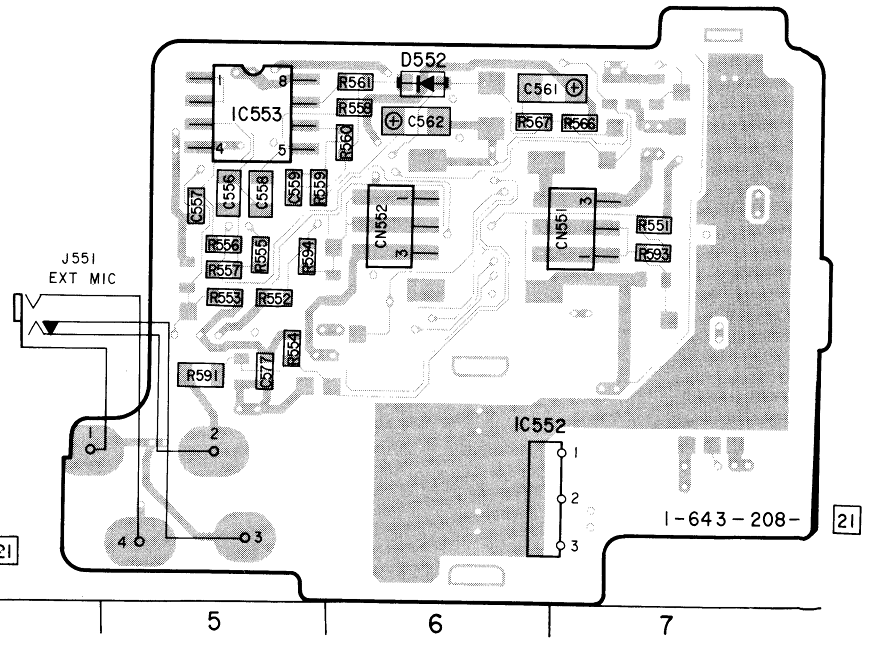
< TRANSISTOR >

Q551	8-729-010-80	TRANSISTOR	FC13
Q555	8-729-822-97	TRANSISTOR	2SC4211-5. 6. 7

MA-143P BOARD (COMPONENT SIDE)


A
B
C
Q555
C569
C566
CN553
C580
C570
R571
C567
R570
C568
C572
C574
C571
C575
R576
IC551
C578
R580
C579
R585
C581
C582
R586
C591
R589
C592
CN554
D551
C564
R569
Q551
R568
R592
C586
C563
C585
R590
1-643-208-
21
09
1
2
3
4

MA-143P BOARD (CONDUCTOR SIDE)


D552
R561
C561
IC553
R559
C562
R567
R566
C557
C556
C558
C559
CN552
CN561
R551
R553
R556
R557
R555
R553
R552
J551
EXT MIC
R591
C577
R554
IC552
1-643-208-
21
5
6
7

AU-135P (AUDIO), MA-143P (MIC AMP) SCHEMATIC DIAGRAMS

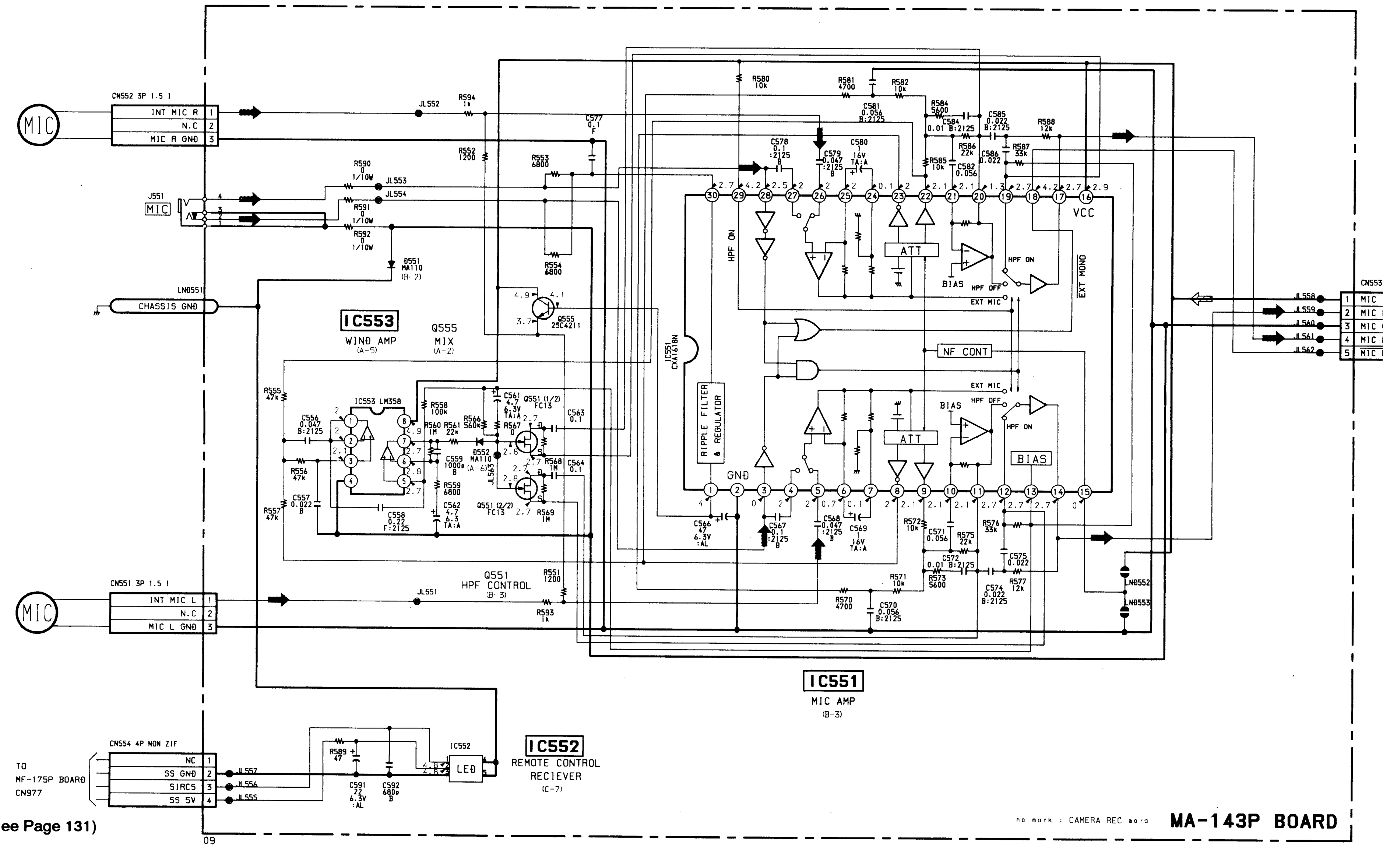
1 2 3 4 5 6 7 8 9 10

A B C D E F G H I J K L

— Ref. No. AU-135P BOARD: 1000 series, MA-143P BOARD: 5000 series —

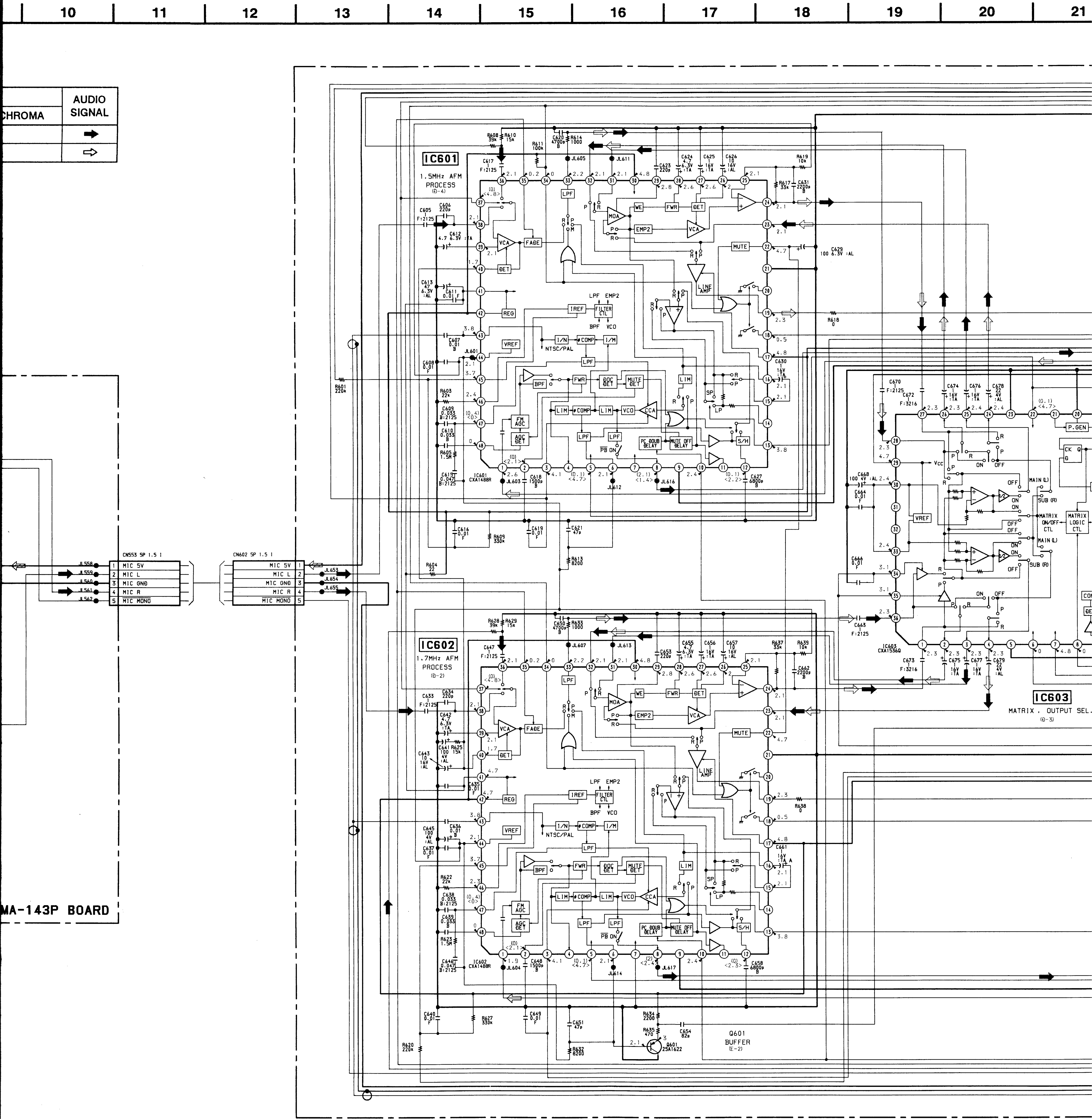
- **SIGNAL PATH**

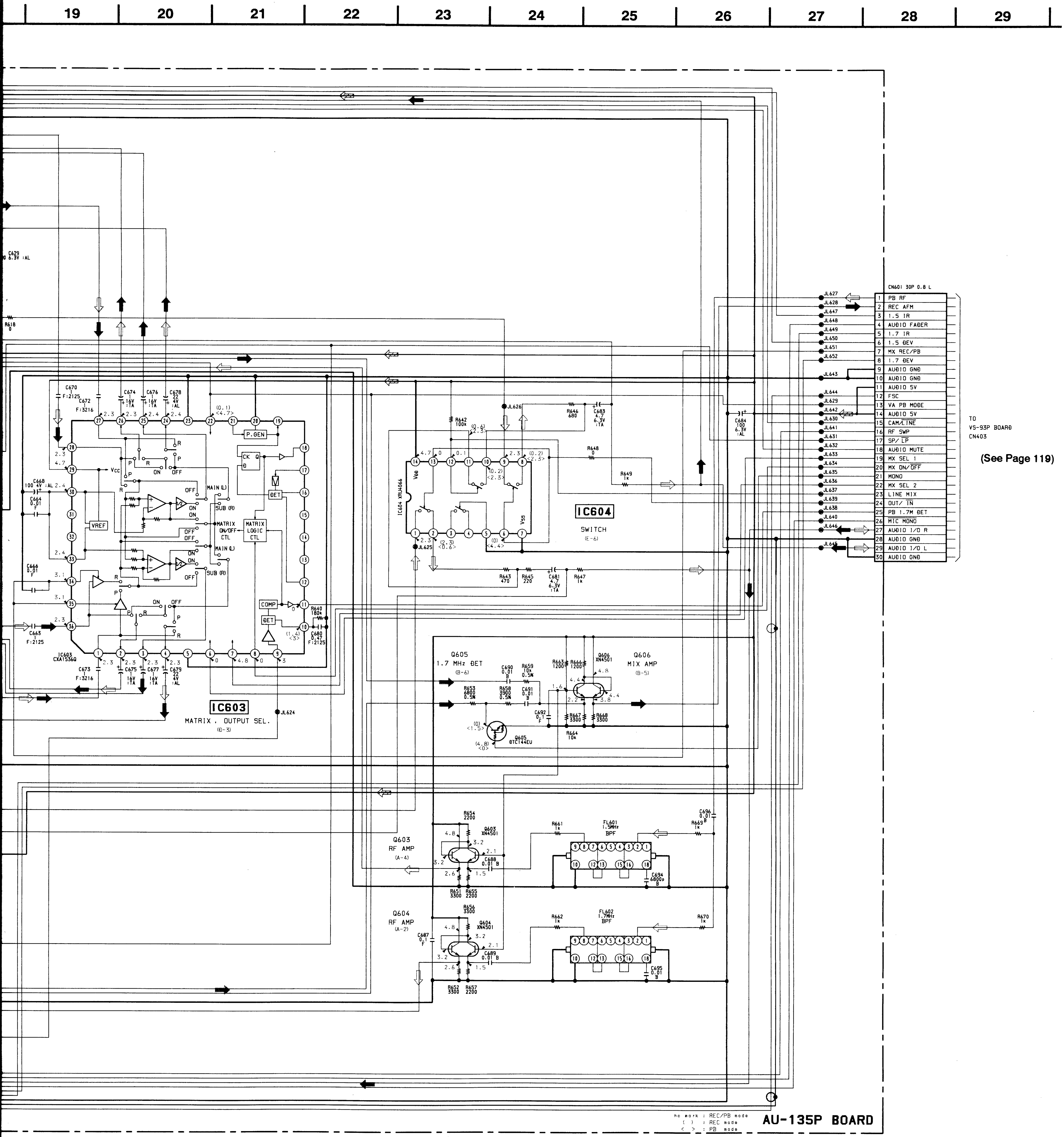
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨



MIC
CN552 3P 1.5 I
INT MIC R
N.C
MIC R GND
J551
MIC
LN0551
CHASSIS GND
MIC
CN551 3P 1.5 I
INT MIC L
N.C
MIC L GND
CN554 4P NON ZIF
TO MF-175P BOARD CN977
NC
SS GND
SIRCS
SS 5V
JL552
JL553
JL554
JL551
R594 1k
R590 0 1/10W
R591 0 1/10W
R592 0 1/10W
R552 1200
R553 6800
R554 6800
C577 0.1 F
D551 MA110
IC553
WIND AMP
Q555
MIX
Q555 2SC4211
IC553 LM358
R555 47k
R556 47k
R557 47k
C556 0.047 B:2125
C557 0.022 B
C558 0.22 F:2125
R558 100k
R560 1M
R561 22k
R566 560k
R567 0
C559 1000p
R559 6800
C561 4.7 6.3V TA:A
Q551 (1/2) FC13
Q551 (2/2) FC13
Q552 MA110
C562 4.7 6.3 TA:A
C563 0.1
C564 0.1
R568 1M
R569 1M
Q551
HPF CONTROL
R551 1200
R593 1k
IC551 CXA1618N
RIPPLE FILTER & REGULATOR
HPF ON
GND
ATT
BIAS
HPF ON
HPF OFF
EXT MIC
EXT MONO
NF CONT
VCC
R580 10k
R581 4700
R582 10k
C581 0.056 B:2125
R584 5600
C584 0.01 B:2125
C585 0.022 B:2125
R588 12k
R586 22k
R585 10k
C582 0.056
C586 0.022
R587 33k
C578 0.1 :2125
C579 0.047 :2125
C580 1 16V TA:A
C566 47 6.3V :AL
C567 0.1 :2125
C568 0.047 :2125
C569 1 16V TA:A
R570 4700
C570 0.056 B:2125
R571 10k
R572 10k
R573 5600
C571 0.056
R575 22k
C572 0.01 B:2125
R576 33k
C574 0.022 B:2125
R577 12k
C575 0.022
LN0552
LN0553
IC551
MIC AMP
CN553
MIC
IC552
LED
R589 47
C591 22 6.3V :AL
C592 680p B
IC552
REMOTE CONTROL RECIEVER
no mark : CAMERA REC mord
MA-143P BOARD
09

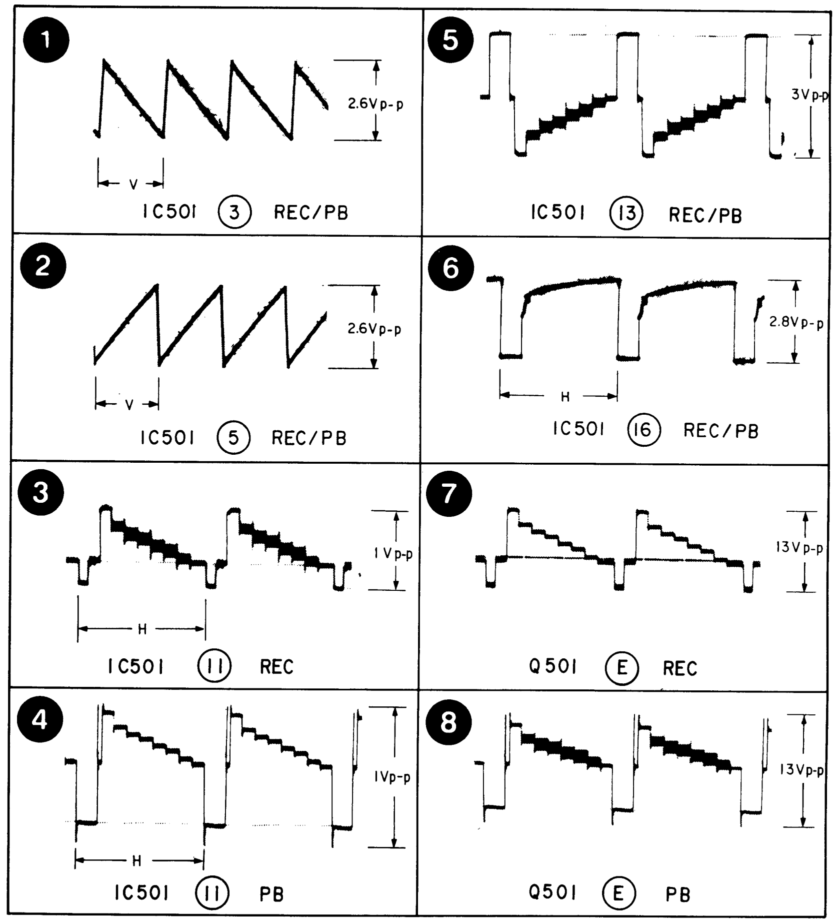
(See Page 131)


10
11
12
13
14
15
16
17
18
19
20
21
HROMA
AUDIO SIGNAL
MA-143P BOARD
CN553 5P 1.5 I
1 MIC 5V
2 MIC L
3 MIC GND
4 MIC R
5 MIC MONO
JL558
JL559
JL560
JL561
JL562
CN602 5P 1.5 I
MIC 5V 1
MIC L 2
MIC GND 3
MIC R 4
MIC MONO 5
JL653
JL654
JL655
IC601
1.5MHz AFM PROCESS
(D-4)
IC601 CXA1488R
IC602
1.7MHz AFM PROCESS
(D-2)
IC602 CXA1488R
IC603
MATRIX, OUTPUT SEL.
(D-3)
IC603 CXA1536Q
Q601 BUFFER
(E-2)
Q601 2SA1622
VCA
FADE
DET
REG
VREF
IREF
FILTER CTL
LPF EMP2
BPF VCO
I/N
COMP
I/M
NTSC/PAL
LPF
BPF
FWR
DOC DET
MUTE DET
FM AGC
AGC DET
LIM
VCO
CCA
PC DOUB DELAY
MUTE OFF DELAY
S/H
PB ON
MOA
WE
EMP2
MUTE
LINE AMP
SP
LP
P.GEN
CK
MATRIX ON/OFF CTL
MATRIX LOGIC CTL
MAIN (L)
SUB (R)
ON
OFF
Vcc


19
20
21
22
23
24
25
26
27
28
29
C629
6.3V :AL
R618
0
C670
F:2125
C672
F:3216
C674
16V
:TA
C676
16V
:TA
C678
22
4V
:AL
(0.1)
<4.7>
P.GEN
CK Q
D
DET
VREF
Vcc
ON
OFF
MAIN (L)
SUB (R)
MATRIX
ON/OFF
CTL
MATRIX
LOGIC
CTL
COMP
C668
100 4V :AL
C664
0.01
F
C666
0.01
F
C663
F:2125
R640
180k
C680
0.47
F:2125
(1.4)
<3>
IC603
CXA1536Q
C673
F:3216
C675
16V
:TA
C677
16V
:TA
C679
22
4V
:AL
JL624
IC603
MATRIX , OUTPUT SEL.
(D-3)
IC604 XRU4066
VDD
VSS
JL626
R642
100k
(0.6)
<2.3>
(0.2)
<2.3>
JL625
(2.3)
<0.6>
(0)
<4.4>
R646
680
C683
4.7
6.3V
:TA
R648
0
R649
1k
IC604
SWITCH
(E-6)
R643
470
R645
220
C681
4.7
6.3V
:TA
R647
1k
C684
100
6.3V
:AL
Q605
1.7 MHz DET
(B-6)
C690
0.01
B
R659
10k
0.5%
R653
6800
0.5%
R658
3900
0.5%
C691
0.01
B
C692
0.1
F
(0)
<1.5>
(4.8)
<0>
Q605
DTC144EU
R663
1200
R666
1200
Q606
XN4501
Q606
MIX AMP
(B-5)
R667
3300
R668
3300
R664
10k
Q603
RF AMP
(A-4)
R654
2200
Q603
XN4501
C688
0.01 B
R651
3300
R655
2200
R661
1k
FL601
1.5MHz
BPF
C694
6800p
B
C696
0.01
B
R669
1k
Q604
RF AMP
(A-2)
C687
0.1
F
R656
3300
Q604
XN4501
C689
0.01 B
R652
3300
R657
2200
R662
1k
FL602
1.7MHz
BPF
C695
0.01
B
R670
1k
CN601 30P 0.8 L
JL627
JL628
JL647
JL648
JL649
JL650
JL651
JL652
JL643
JL644
JL629
JL642
JL630
JL641
JL631
JL632
JL633
JL634
JL635
JL636
JL637
JL639
JL638
JL640
JL646
JL645
1 PB RF
2 REC AFM
3 1.5 IR
4 AUDIO FADER
5 1.7 IR
6 1.5 DEV
7 MX REC/PB
8 1.7 DEV
9 AUDIO GND
10 AUDIO GND
11 AUDIO 5V
12 FSC
13 VA PB MODE
14 AUDIO 5V
15 CAM/LINE
16 RF SWP
17 SP/ LP
18 AUDIO MUTE
19 MX SEL 1
20 MX ON/OFF
21 MONO
22 MX SEL 2
23 LINE MIX
24 OUT/ IN
25 PB 1.7M DET
26 MIC MONO
27 AUDIO I/O R
28 AUDIO GND
29 AUDIO I/O L
30 AUDIO GND
TO
VS-93P BOARD
CN403
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
AU-135P BOARD

(See Page 119)

VF-42P BOARD



< DIODE >

D501	8-719-820-65	DIODE	TLS221
D502	8-719-984-02	LED	BR4371F
D503	8-719-400-20	DIODE	MA152WA

< IC >

IC501	8-759-420-01	IC	AN2512S

< TRANSISTOR >

Q501	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q502	8-729-216-31	TRANSISTOR	2SA1163-G
Q503	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q504	8-729-106-68	TRANSISTOR	2SD1615A-GP

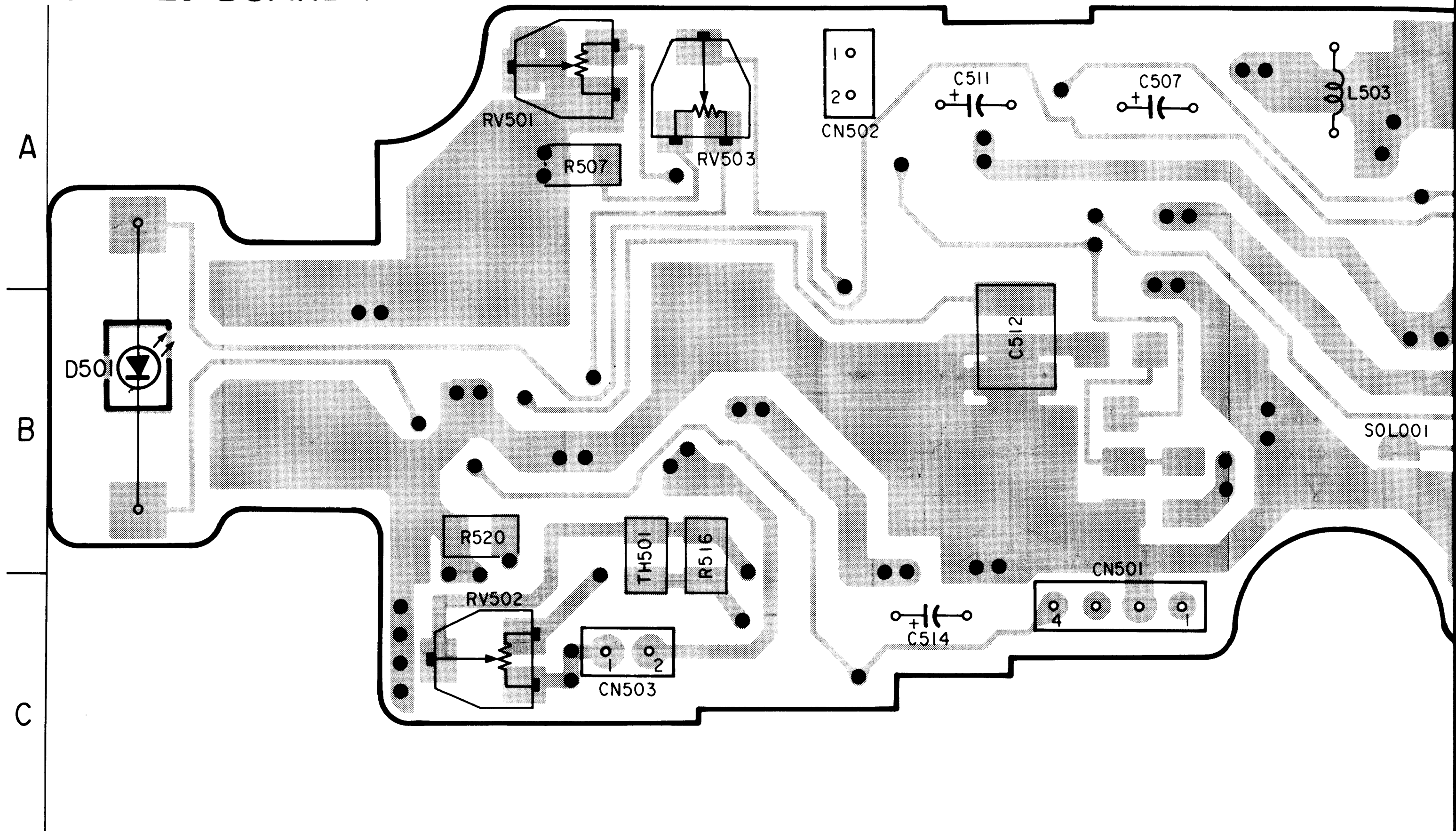
- **For printed wiring boards.**

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VF-42P (VIEW FINDER) PRINTED WIRING BOARD

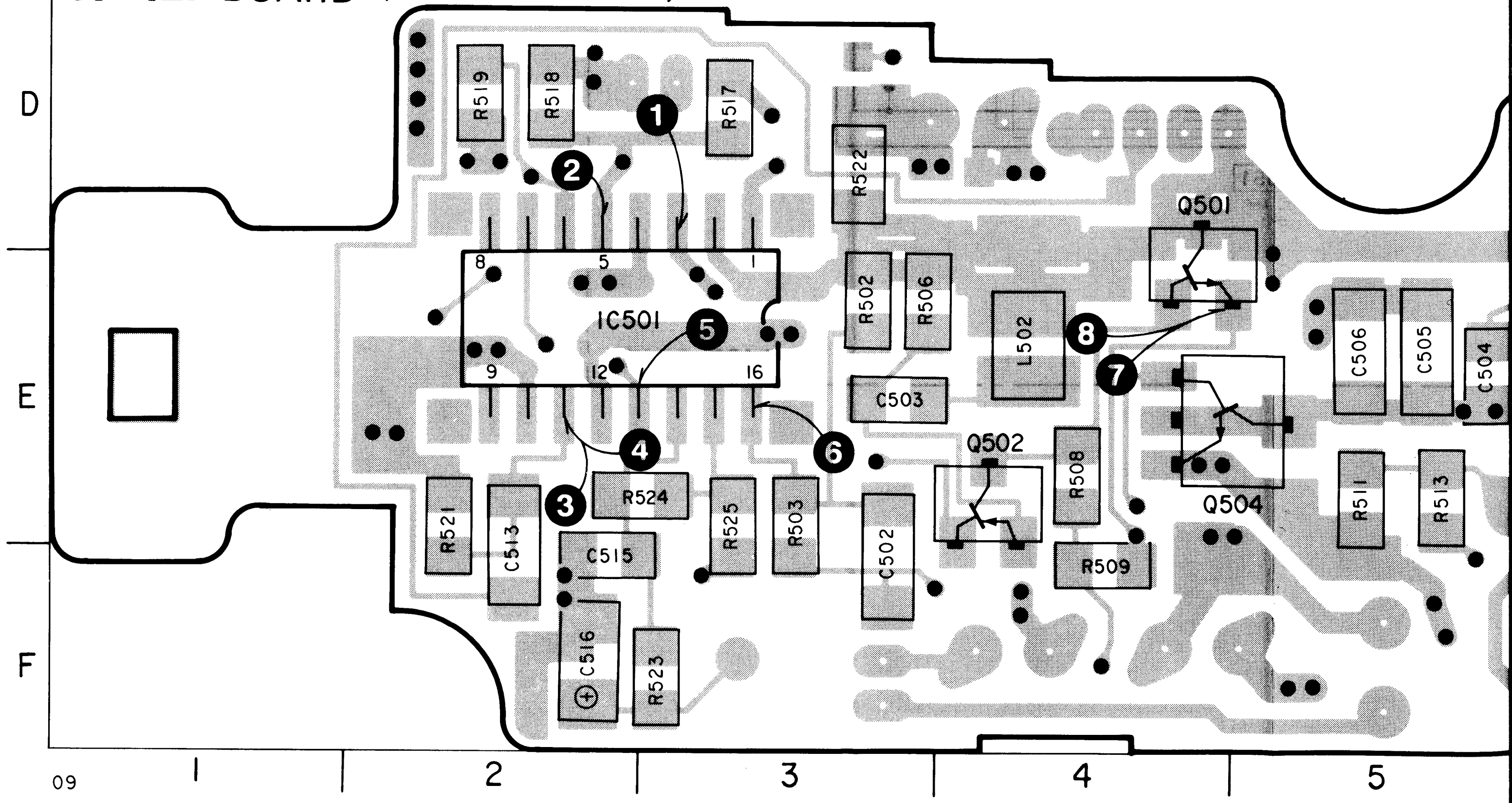
— Ref. No. VF-42P BOARD: 7000 series —

VF-42P BOARD (COMPONENT SIDE)

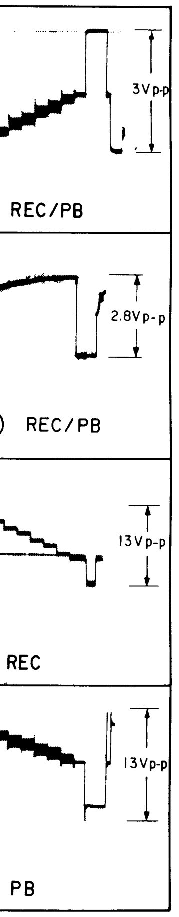


A
B
C
RV501
RV503
CN502
1
2
C511
C507
L503
R507
D501
C512
SOL001
R520
TH501
R516
CN501
4
1
RV502
C514
CN503
1
2

VF-42P BOARD (CONDUCTOR SIDE)



D
E
F
R519
R518
R517
R522
1
2
Q501
8
5
1
IC501
5
9
12
16
R502
R506
L502
8
7
C506
C505
C504
C503
4
6
3
R524
Q502
R508
Q504
R521
C513
C515
R525
R503
C502
R509
R511
R513
C516
R523
09
1
2
3
4
5



E >

TLS221
BR4371F
MA152WA

512S

SISTOR >

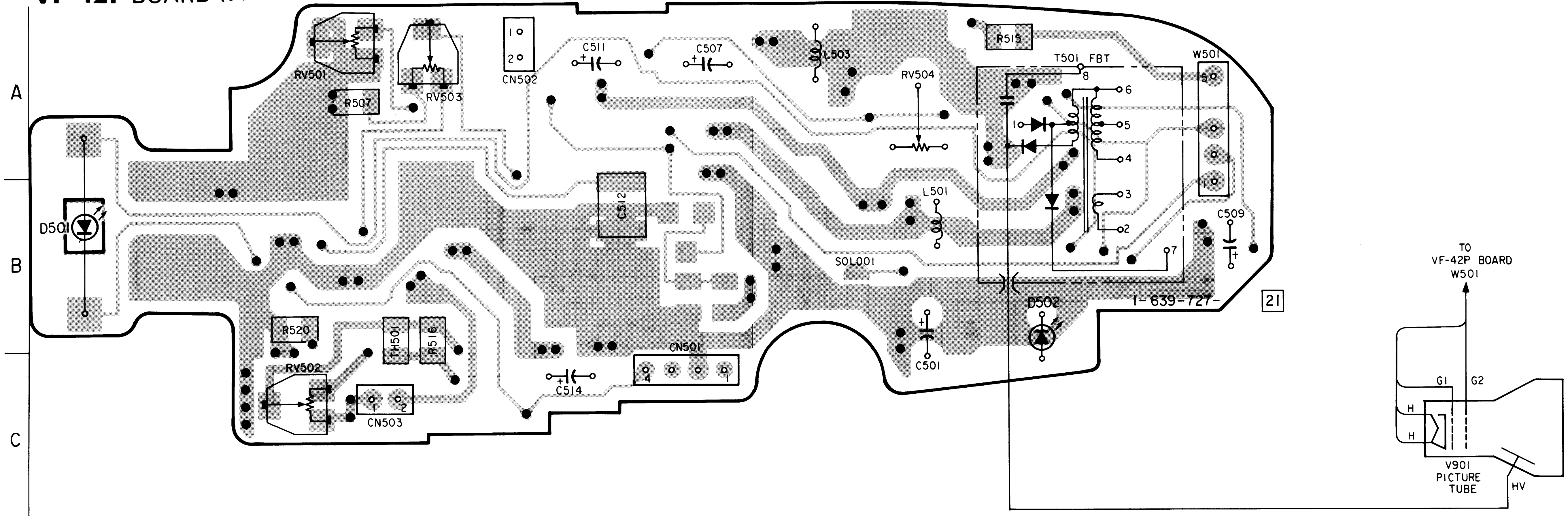
STOR	2SC1623-L5L6
STOR	2SA1163-G
STOR	2SC1623-L5L6
STOR	2SD1615A-GP

side seen from
ted.
de seen from the

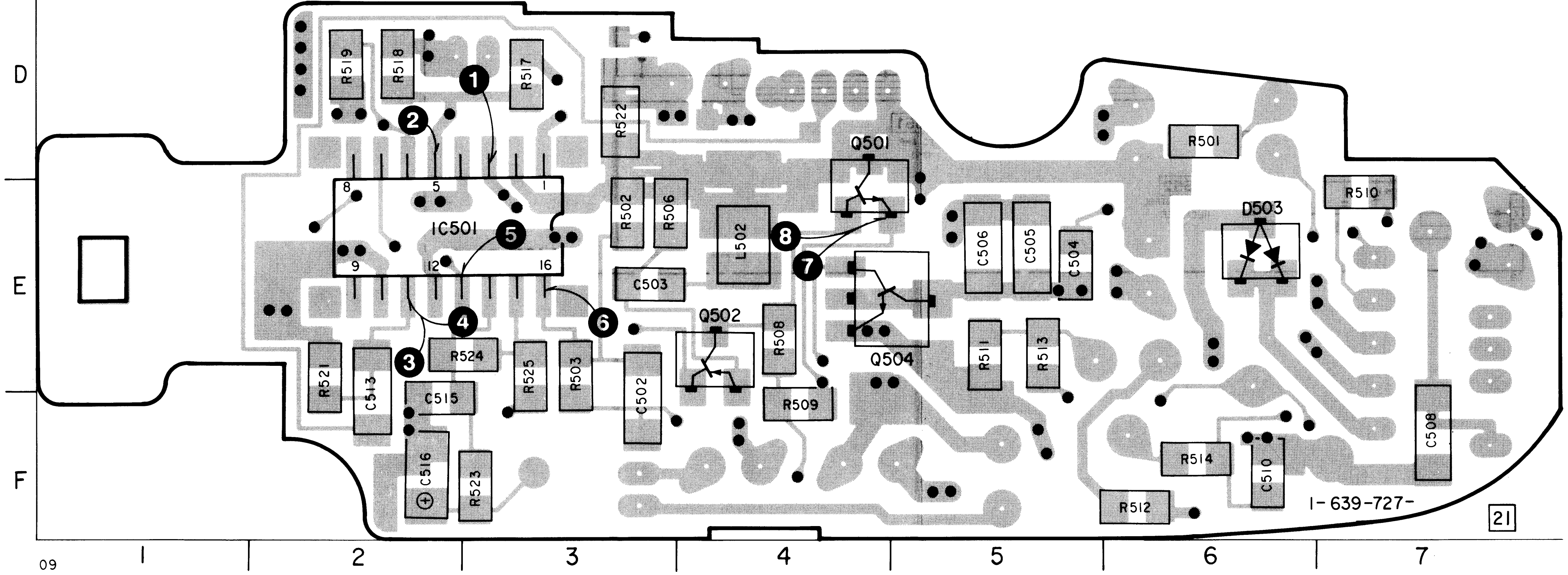
VF-42P (VIEW FINDER) PRINTED WIRING BOARD

— Ref. No. VF-42P BOARD: 7000 series —

VF-42P BOARD (COMPONENT SIDE)


A
B
C
RV501
R507
RV503
CN502
1
2
C511
C507
L503
R515
T501 FBT
W501
RV504
8
6
5
4
3
2
7
1
D501
C512
L501
C509
SOL001
D502
1-639-727-
21
R520
TH501
R516
RV502
CN503
1
2
C514
CN501
4
1
C501
TO
VF-42P BOARD
W501
G1
G2
H
H
V901
PICTURE
TUBE
HV

VF-42P BOARD (CONDUCTOR SIDE)

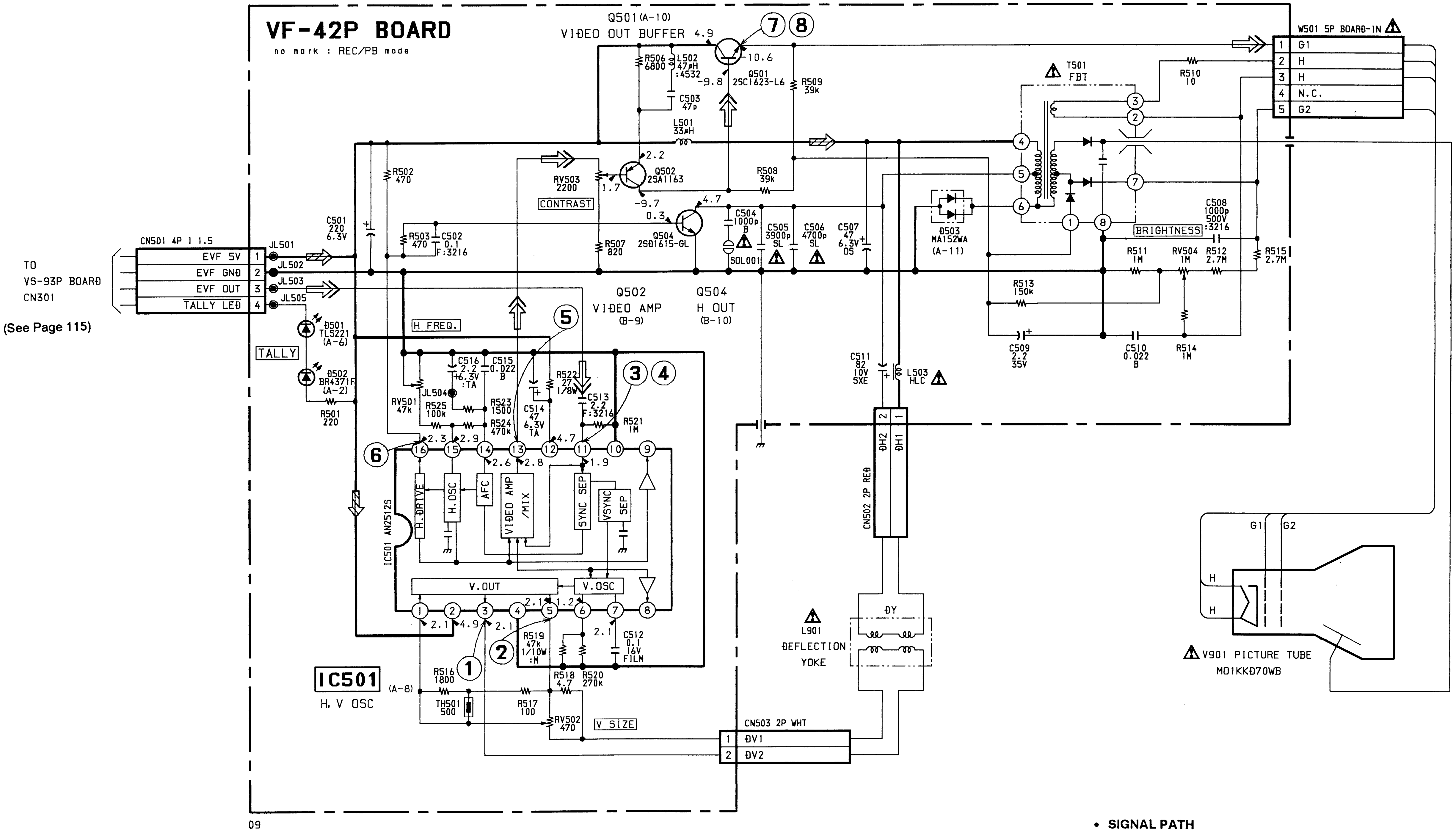

D
E
F
R519
R518
R517
1
2
R522
8
5
1
IC501
9
12
16
5
4
6
3
R521
C513
R524
C515
R525
R503
C516
R523
R502
R506
L502
C503
Q502
C502
R508
R509
Q501
8
7
Q504
C506
C505
C504
R511
R513
R501
R510
D503
R514
C510
R512
C508
1-639-727-
21
09
1
2
3
4
5
6
7

VF-42P (VIEW FINDER) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A B C D E F G H I J

— Ref. No. VF-42P BOARD: 7000 series —



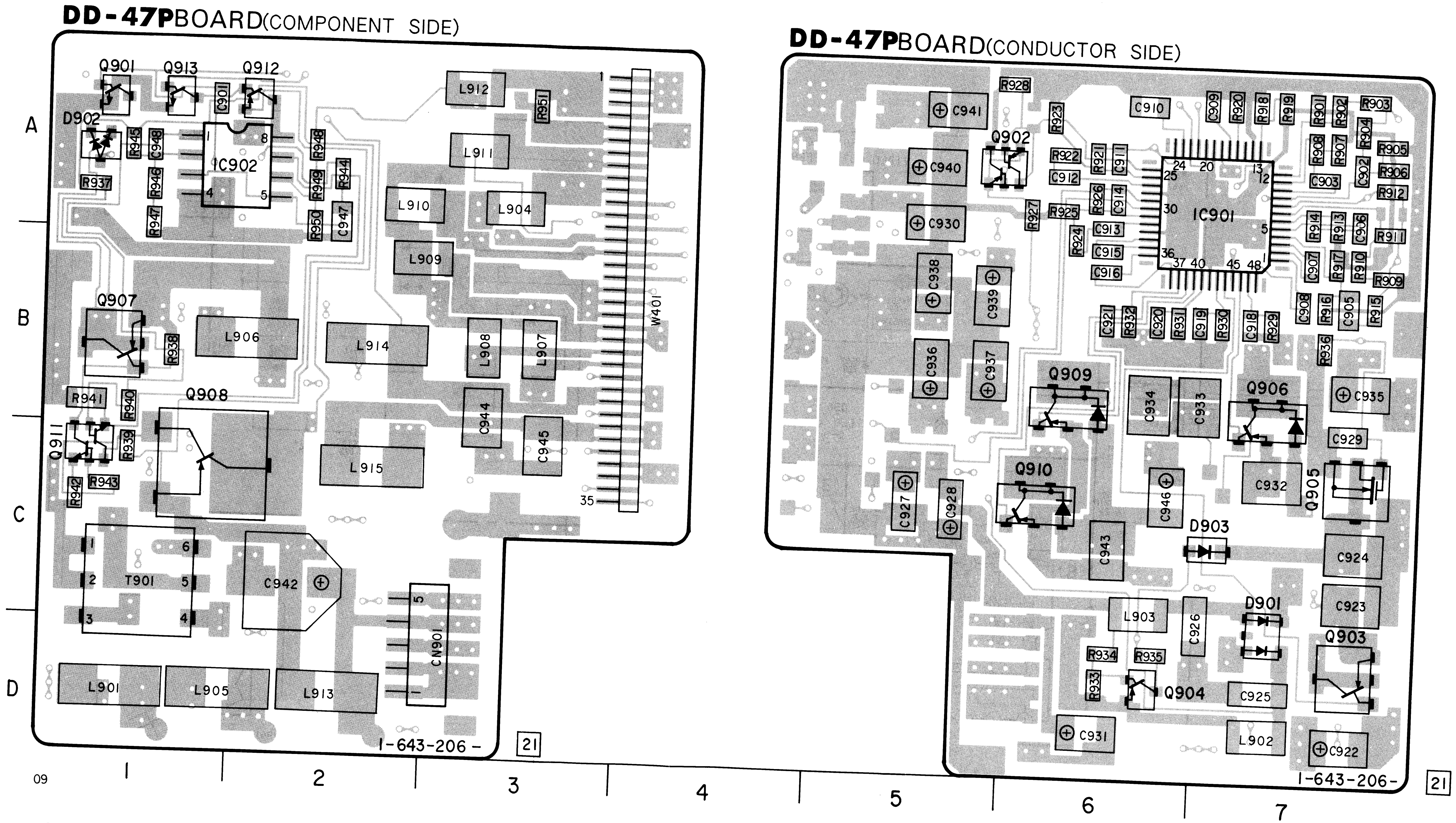
VF-42P BOARD
no mark : REC/PB mode
Q501 (A-10)
VIDEO OUT BUFFER 4.9
⑦⑧
10.6
-9.8
Q501 2SC1623-L6
R506 6800
L502 47μH :4532
C503 47p
R509 39k
L501 33μH
2.2
Q502 2SA1163
1.7
R508 39k
RV503 2200
CONTRAST
-9.7
0.3
4.7
Q504 2SD1615-GL
C504 1000p B
SOL001
C505 3900p SL
C506 4700p SL
C507 47 6.3V OS
R507 820
Q502 VIDEO AMP (B-9)
Q504 H OUT (B-10)
R502 470
R503 470
C502 0.1 F:3216
C501 220 6.3V
CN501 4P I 1.5
1 EVF 5V
2 EVF GND
3 EVF OUT
4 TALLY LED
JL501
JL502
JL503
JL505
TO VS-93P BOARD CN301
(See Page 115)
D501 TL5221 (A-6)
D502 BR4371F (A-2)
R501 220
TALLY
H FREQ.
⑤
C516 2.2 6.3V :TA
C515 0.022 B
R522 27 1/8W
C513 2.2 F:3216
③④
JL504
RV501 47k
R525 100k
R523 1500
R524 470k
C514 47 6.3V TA
R521 1M
2.3
2.9
2.6
2.8
4.7
1.9
⑥
16 15 14 13 12 11 10 9
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
IC501 AN2512S
V.OUT
V.OSC
1 2 3 4 5 6 7 8
2.1
4.9
2.1
2.1
1.2
2.1
①
②
R519 47k 1/10W :M
C512 0.1 16V FILM
R518 4.7
R520 270k
IC501
H, V OSC
(A-8)
R516 1800
TH501 500
R517 100
RV502 470
V SIZE
CN503 2P WHT
1 DV1
2 DV2
D9
C511 82 10V SXE
L503 HLC
CN502 2P RED
DH2
DH1
L901 DEFLECTION YOKE
DY
T501 FBT
R510 10
D503 MA152WA (A-11)
C508 1000p 500V :3216
BRIGHTNESS
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 35V
C510 0.022 B
R514 1M
W501 5P BOARD-IN
1 G1
2 H
3 H
4 N.C.
5 G2
G1
G2
H
H
V901 PICTURE TUBE M01KKD70WB

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB		⇨		

DD-47P (DC-DC CONVERTER) PRINTED WIRING BOARD

— Ref. No. DD-47P BOARD: 4000 series —


DD-47PBOARD(COMPONENT SIDE)
DD-47PBOARD(CONDUCTOR SIDE)
A
B
C
D
09
1
2
3
4
5
6
7
Q901
Q913
Q912
D902
C901
IC902
R945
C948
R946
R947
R937
R948
R949
R944
R950
C947
L912
R951
L911
L910
L904
L909
W401
1
35
Q907
L906
L914
L908
L907
R938
R941
R940
Q908
Q911
R939
R942
R943
C944
C945
L915
T901
C942
CN901
L901
L905
L913
1-643-206-
21
C941
R928
R923
C910
C909
R920
R918
R919
R901
R902
R903
Q902
C940
R922
R921
C911
C912
R908
R907
R904
R905
R906
C903
C902
R912
C930
R927
R925
R926
C914
IC901
C913
R924
C915
C916
R914
R913
C906
R911
C907
R917
R910
R909
C938
C939
C921
R932
C920
R931
C919
R930
C918
R929
C908
R916
C905
R915
R936
C936
C937
Q909
C934
C933
Q906
C935
C929
Q910
C946
C932
Q905
C927
C928
C943
D903
C924
D901
C923
L903
C926
Q903
R934
R935
R933
Q904
C925
C931
L902
C922

- **For printed wiring boards.**
- DD-47P board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

< DIODE >

D901	8-719-981-59	DIODE	FC805
D902	8-719-941-09	DIODE	DAP202U
D903	8-719-988-62	DIODE	1SS355

< IC >

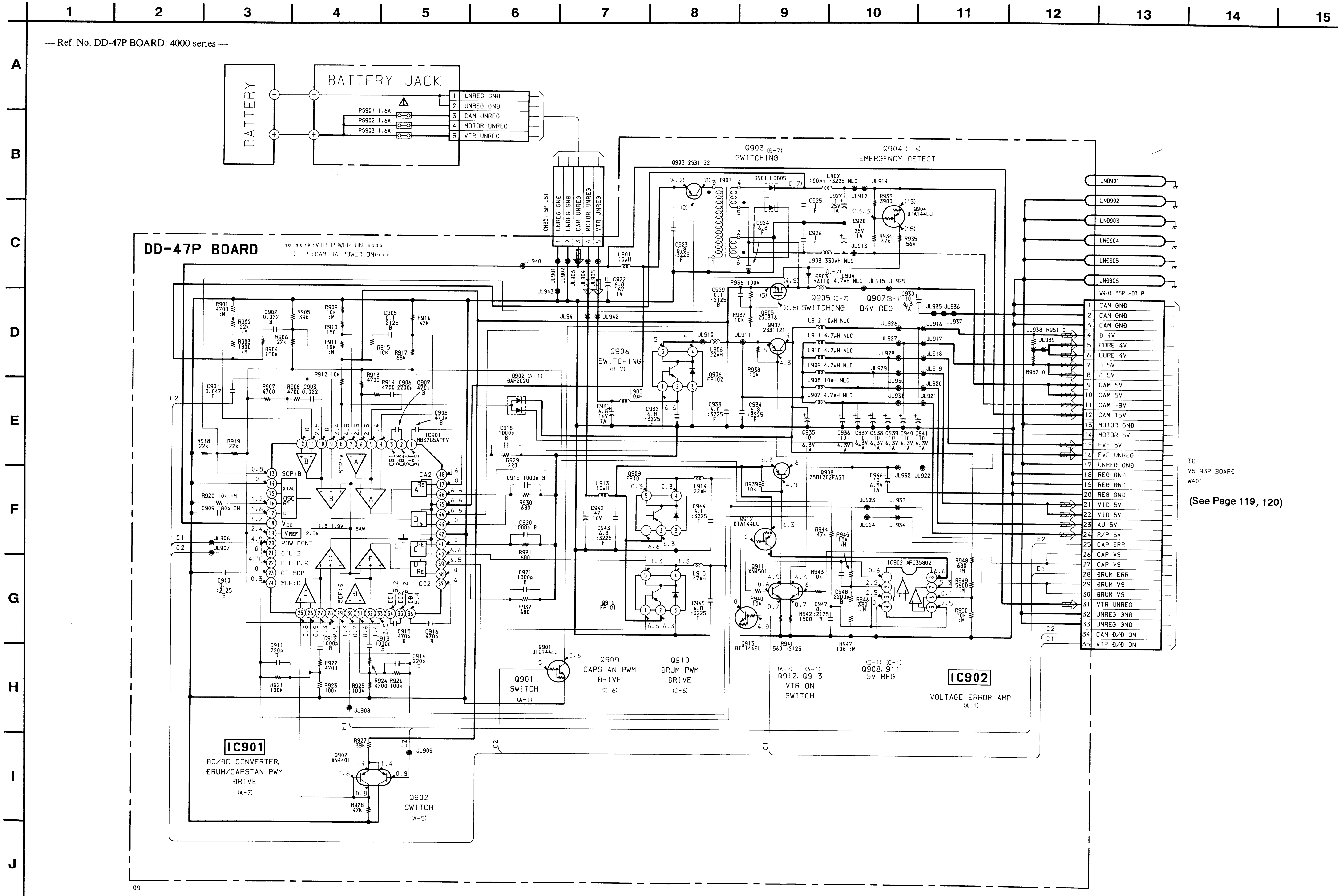
IC901	8-759-060-94	IC	MB3785APFV-G-BND-ER
IC902	8-759-998-98	IC	LM358D

< TRANSISTOR >

Q901	8-729-905-18	TRANSISTOR	DTC144EU
Q902	8-729-403-27	TRANSISTOR	XN4401
Q903	8-729-804-41	TRANSISTOR	2SB1122-S
Q904	8-729-905-12	TRANSISTOR	DTA144EU
Q905	8-729-015-61	TRANSISTOR	2SJ316-TD
Q906	8-729-823-84	TRANSISTOR	FP102-TL
Q907	8-729-805-25	TRANSISTOR	2SB1121-S
Q908	8-729-822-84	TRANSISTOR	2SB1202FAST
Q909	8-729-823-82	TRANSISTOR	FP101
Q910	8-729-823-82	TRANSISTOR	FP101
Q911	8-729-907-26	TRANSISTOR	IMX1
Q912	8-729-905-12	TRANSISTOR	DTA144EU
Q913	8-729-905-18	TRANSISTOR	DTC144EU

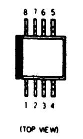
DD-47P (DC-DC CONVERTER) SCHEMATIC DIAGRAM

— Ref. No. DD-47P BOARD: 4000 series —

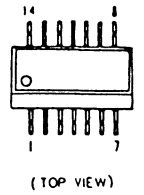

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
BATTERY
BATTERY JACK
PS901 1.6A
PS902 1.6A
PS903 1.6A
1 UNREG GND
2 UNREG GND
3 CAM UNREG
4 MOTOR UNREG
5 VTR UNREG
CN901 5P JST
DD-47P BOARD
no mark: VTR POWER ON mode
( ) : CAMERA POWER ON mode
Q903 (B-7) SWITCHING
Q904 (B-6) EMERGENCY DETECT
Q903 2SB1122
T901
D901 FC805
Q904 DTA144EU
Q905 (C-7) (0.5) SWITCHING
Q907 (B-1) D4V REG
Q905 2SJ316
Q907 2SB1121
Q906 SWITCHING (B-7)
Q906 FP102
D902 (A-1) DAP202U
IC901 MB3785APFV
Q909 FP101
Q910 FP101
Q908 2SB1202FAST
Q912 DTA144EU
Q911 XN4501
Q913 DTC144EU
IC902 μPC358G2
Q901 DTC144EU
Q901 SWITCH (A-1)
Q909 CAPSTAN PWM DRIVE (B-6)
Q910 DRUM PWM DRIVE (C-6)
(A-2) (A-1) Q912, Q913 VTR ON SWITCH
(C-1) (C-1) Q908, 911 5V REG
IC902 VOLTAGE ERROR AMP (A-1)
IC901 DC/DC CONVERTER, DRUM/CAPSTAN PWM DRIVE (A-7)
Q902 XN4401
Q902 SWITCH (A-5)
SCP:B
XTAL
OSC
RT
CT
Vcc
VREF 2.5V
POW CONT
CTL B
CTL C, D
CT SCP
SCP:C
SCP:A
SCP:D
LND901
LND902
LND903
LND904
LND905
LND906
W401 35P HOT.P
1 CAM GND
2 CAM GND
3 CAM GND
4 D 4V
5 CORE 4V
6 CORE 4V
7 D 5V
8 D 5V
9 CAM 5V
10 CAM 5V
11 CAM -9V
12 CAM 15V
13 MOTOR GND
14 MOTOR 5V
15 EVF 5V
16 EVF UNREG
17 UNREG GND
18 REG GND
19 REG GND
20 REG GND
21 VID 5V
22 VID 5V
23 AU 5V
24 R/P 5V
25 CAP ERR
26 CAP VS
27 CAP VS
28 DRUM ERR
29 DRUM VS
30 DRUM VS
31 VTR UNREG
32 UNREG GND
33 UNREG GND
34 CAM D/D ON
35 VTR D/D ON
TO VS-93P BOARD W401
(See Page 119, 120)
09

4-3. SEMICONDUCTORS

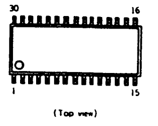
AK6420F
LM358D


8 7 6 5
1 2 3 4
(TOP VIEW)

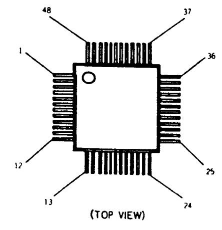
AN2512S


14
8
1
7
(TOP VIEW)

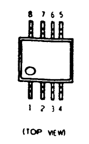
CXA-1618N-E2
MCD004BN


30
16
1
15
(Top view)

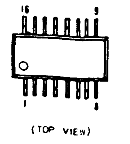
CXA1208R
CXA1481AR
CXA1488RR


48
37
1
36
12
25
13
24
(TOP VIEW)

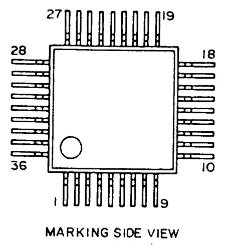
CXA1211M
NJM2234M
RC3414M


8 7 6 5
1 2 3 4
(TOP VIEW)

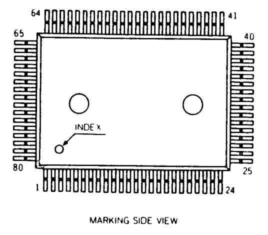
CXA1452
CXL5502M
MPC1727VMER


16
9
1
8
(TOP VIEW)

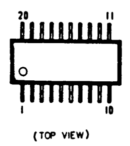
CXA1536QQ
LB8110M


27
19
28
18
36
10
1
9
MARKING SIDE VIEW

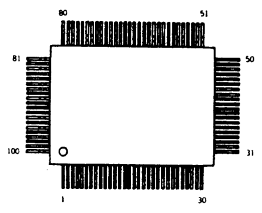
CXD2100AQ
µPD75316GF


64
41
65
40
80
25
1
24
INDEX
MARKING SIDE VIEW

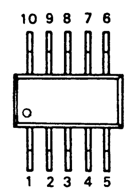
CXD1250N
CXD2104N
LC78865M
MB88346BPFV
MPC1724VMEL
µPD7564G-540


20
11
1
10
(TOP VIEW)

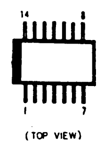
CXP80624-281R/293R


80
51
81
50
100
31
1
30

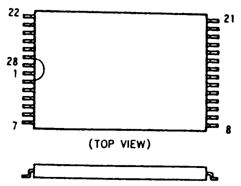
LB1830M


10 9 8 7 6
1 2 3 4 5

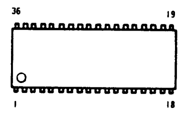
LM324D


14
8
1
7
(TOP VIEW)

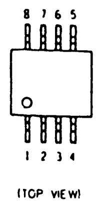
MB8464


22
21
28
1
7
8
(TOP VIEW)

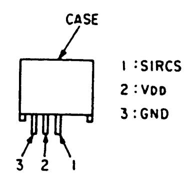
MCD002AR



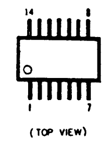
RC3414M


8 7 6 5
1 2 3 4
(TOP VIEW)

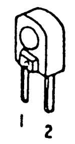
SBX1619-51


CASE
1 :SIRCS
2 :VDD
3 :GND
3 2 1

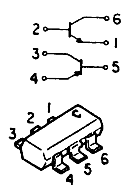
TL1596CDB
XRU4066BF


14
8
1
7
(TOP VIEW)

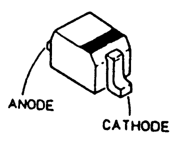
PT4850F



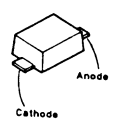
XP4601


2
6
3
1
4
5
2
1
3
6
4
5

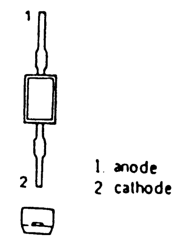
MA110


ANODE
CATHODE

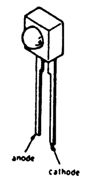
MA728


Anode
Cathode

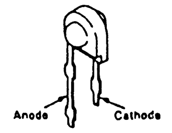
TLS221


1
2
1 anode
2 cathode

BR4371F


Anode
Cathode

GL453S


Anode
Cathode

SECTION 5

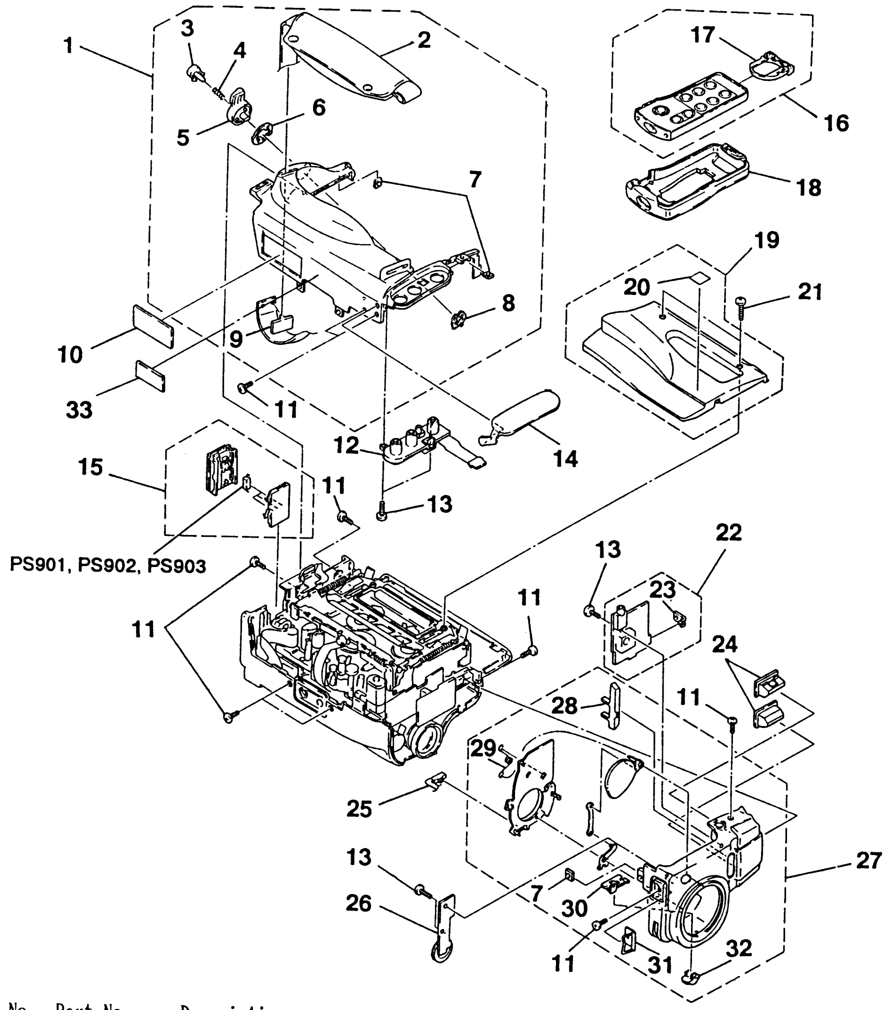
EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when order
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (L) AND F PANEL ASSEMBLIES


1
2
3
4
5
6
7
8
9
10
33
11
12
13
14
15
PS901, PS902, PS903
11
16
17
18
19
20
21
22
23
13
11
24
28
11
29
25
13
26
7
30
11
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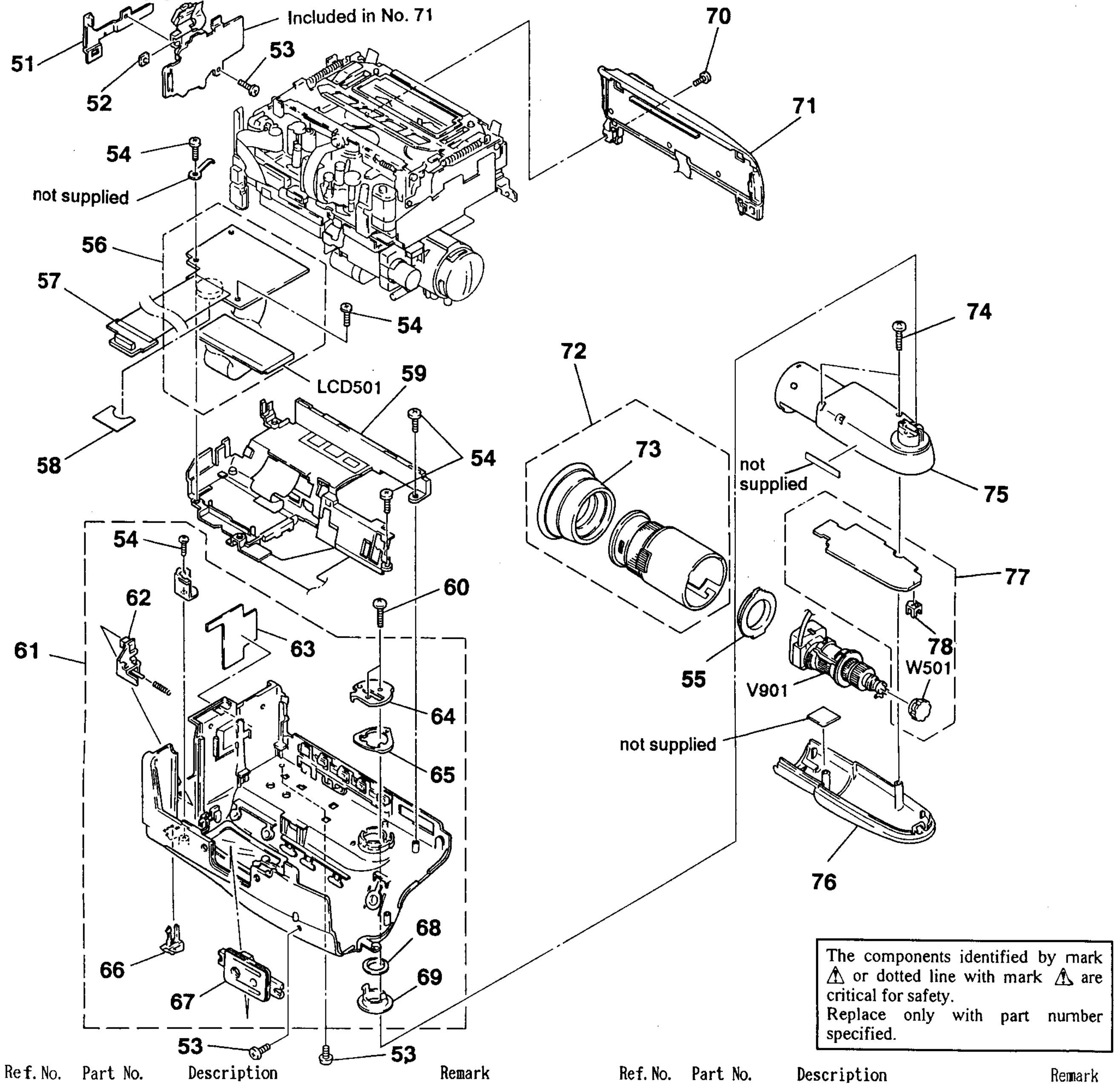
Ref. No.	Part No.	Description	Remark
1	X-3941-602-1	CABINET (L) ASSY (AEP:BLACK, UK model)	
1	X-3941-726-1	CABINET (L) ASSY (E, Australian, Tourist model)	
1	X-3941-839-1	CABINET (L) ASSY (AEP:BLUE model)	
2	3-736-807-01	BELT, GRIP	
3	3-942-950-01	BUTTON, S/S	
4	3-578-221-00	SPRING, COMPRESSION	
5	3-942-985-01	KNOB, STAND-BY	
6	3-736-364-01	SPRING	
7	3-718-233-01	NUT, PLATE	
8	3-942-894-01	HOLDER, STAND-BY KNOB	
9	3-942-895-01	STOPPER, BELT	
* 10	3-948-004-01	LABEL, MODEL NUMBER (AEP model)	
* 10	3-948-346-01	LABEL, MODEL NUMBER (EXCEPT AEP model)	
11	3-719-381-01	SCREW (M2X4)	
12	1-537-369-11	TERMINAL BOARD (JK-3100) (E, Australian, Tourist model)	
12	1-537-369-21	TERMINAL BOARD (JK-3100) (AEP, UK model)	
13	3-719-601-01	SCREW (B2X5), TAPPING	
14	3-943-012-01	COVER, JACK (EXCEPT AEP:BLUE model)	
14	3-943-012-21	COVER, JACK (AEP:BLUE model)	
15	1-537-368-21	TERMINAL BOARD (BATTERY)	
16	1-693-137-31	REMOTE COMMANDER (CAM CORDER) (RMT-701)	
17	3-708-412-01	LID, REMOTE COMMANDER	

Ref. No.	Part No.	Description	Remark
* 18	3-943-154-11	HOLDER (B), REMOTE CONTROL	
19	X-3941-583-1	LID ASSY, CASSETTE (EXCEPT AEP : BLUE model)	
19	X-3941-840-1	LID ASSY, CASSETTE (AEP:BLUE model)	
* 20	3-703-713-41	STICKER, SONY SYMBOL (10)	
21	3-727-902-11	SCREW (M1.4), SPECIAL	
* 22	A-7063-167-A	MA-143P BOARD, COMPLETE	
* 23	3-947-506-01	PLATE, GROUND, MICROPHONE	
24	A-7091-800-A	MICROPHONE UNIT	
25	1-692-084-11	SWITCH ASSY	
* 26	A-7071-607-A	MF-175P BOARD, COMPLETE (EXCEPT AEP:BLUE model)	
* 26	A-7071-648-A	MF-175P BOARD, COMPLETE (AEP:BLUE model)	
27	X-3941-584-1	PANEL ASSY, F (EXCEPT AEP:BLUE model)	
27	X-3941-843-1	PANEL ASSY, F (AEP:BLUE model)	
28	3-947-361-01	PLATE, LIGHT GUIDE	
29	3-947-357-01	SPRING, TORSION	
30	3-947-800-01	HOLDER, S KNOB	
31	3-947-358-01	STAND	
32	3-942-905-01	KNOB, S	
* 33	3-704-235-01	LABEL, CAUTION (UK)	
⚠PS901	1-532-841-41	LINK, IC	
⚠PS902	1-532-841-41	LINK, IC	
⚠PS903	1-532-841-41	LINK, IC	

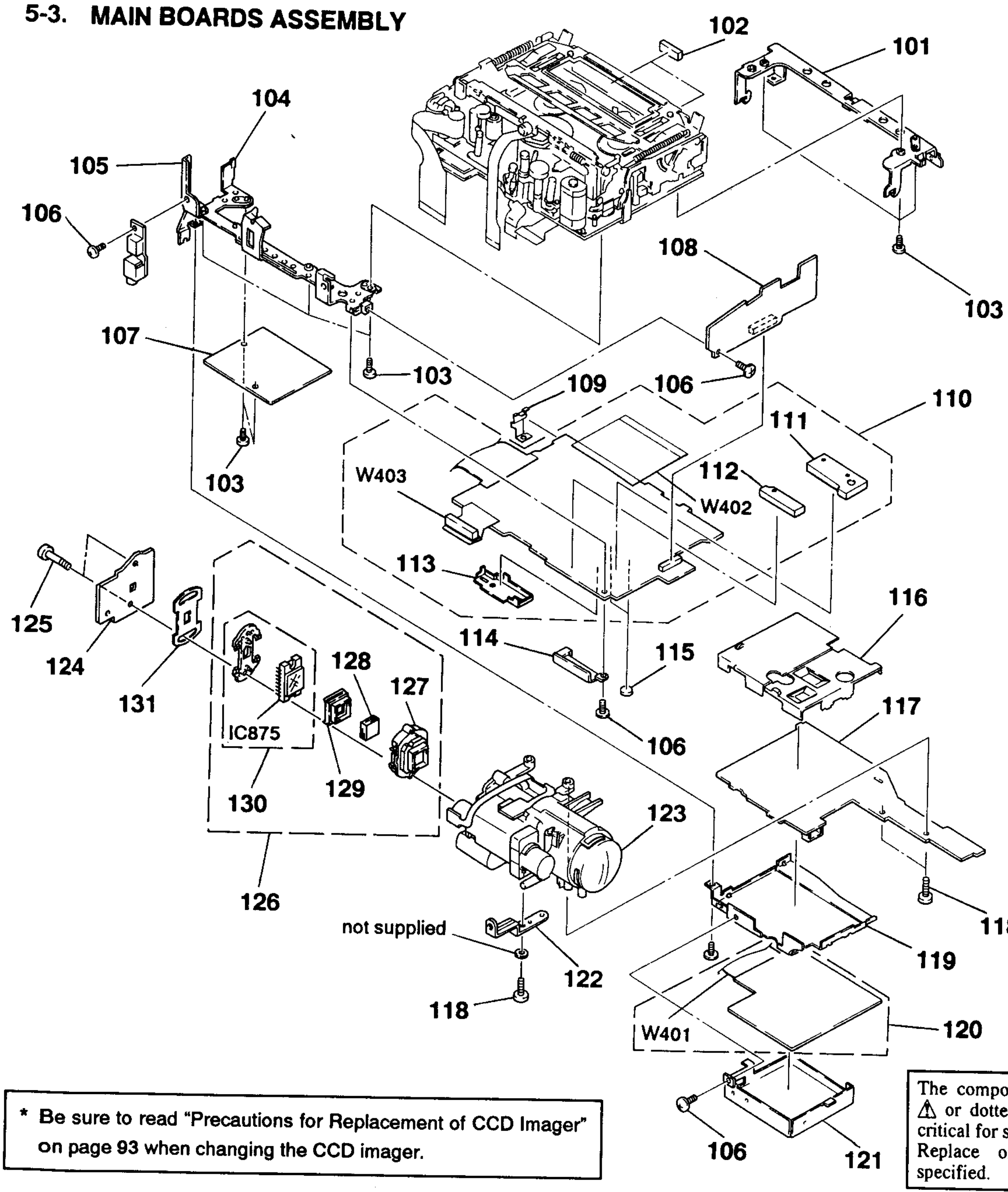
5-2. CABINET (R) AND EVF ASSEMBLIES



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	3-947-354-01	BRACKET (L)	
52	3-718-233-01	NUT, PLATE	
53	3-719-381-01	SCREW (M2X4)	
54	3-719-601-01	SCREW (B2X5), TAPPING	
55	3-747-116-01	COVER, CRT	
* 56	A-7063-166-A	LC-40P BOARD, COMPLETE(EXCEPT AEP:BLUE model)	
* 56	A-7063-258-A	LC-40P BOARD, COMPLETE (AEP:BLUE model)	
* 57	A-7071-606-A	CN-64P BOARD, COMPLETE	
* 58	3-948-369-01	SHEET, BLIND	
59	1-466-711-11	SWITCH BLOCK, CONTROL (CF3200) (E, Australian, Tourist model)	
* 59	1-466-711-21	SWITCH BLOCK, CONTROL (CF3200) (AEP,UK model)	
60	3-740-546-01	SCREW (M2X10)	
61	X-3941-580-1	CABINET (R) ASSY (AEP:BLACK,UK model)	
61	X-3941-841-1	CABINET (R) ASSY (AEP:BLUE model)	
61	X-3941-915-1	CABINET (R) ASSY (E,Australian,Tourist model)	
62	3-947-449-01	LOCK, BATTERY	
* 63	3-944-102-01	LABEL, BATTERY FITTING	
64	3-942-897-01	PLATE, LOCK, TILT	
65	3-747-110-01	SPRING, LEAF, TILT	
66	3-943-068-01	KNOB, BATTERY (EXCEPT AEP:BLUE model)	
66	3-943-068-31	KNOB, BATTERY (AEP:BLUE model)	
67	3-942-911-01	SCREW, TRIPOD	
68	3-747-112-01	RING, TILT	
69	3-747-109-01	SLEEVE, EVF	
70	3-713-786-51	SCREW (M2X3)	
71	1-466-710-11	SWITCH BLOCK, CONTROL (ZM3200) (AEP, UK model)	
71	1-466-710-21	SWITCH BLOCK, CONTROL (ZM3200) (E, Australian, Tourist model)	
72	X-3941-603-1	HOLDER ASSY, FINDER	
73	3-946-426-01	EYE CUP	
74	3-713-790-31	SCREW (M2X8), TAPPING, P3	
75	X-3940-706-1	CABINET (L) ASSY, EVF (EXCEPT AEP : BLUE model)	
75	X-3941-842-1	CABINET (L) ASSY, EVF (AEP:BLUE model)	
76	3-943-077-01	CABINET(R), EVF (EXCEPT AEP:BLUE model)	
76	3-943-077-65	CABINET(R), EVF (AEP:BLUE model)	
* 77	A-7062-880-A	VF-42P BOARD, COMPLETE	
78	3-942-888-01	HOLDER, LID	
LCD501	1-809-671-21	DISPLAY PANEL, LIQUID CRYSTAL	
⚠V901	1-452-565-11	CRT ASSY (M01KTA80WB)	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	

5-3. MAIN BOARDS ASSEMBLY

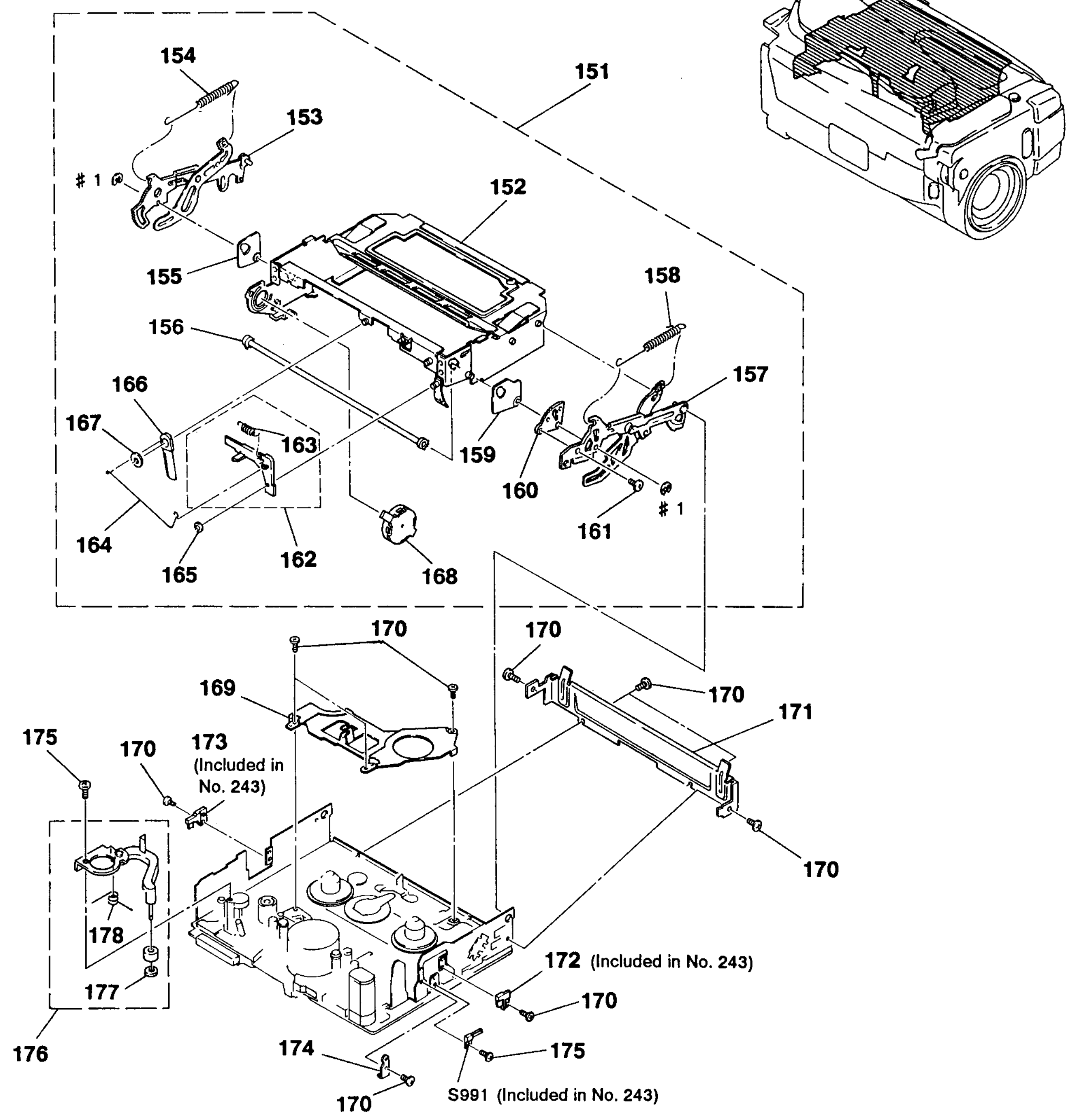


* Be sure to read "Precautions for Replacement of CCD Imager" on page 93 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 101	3-947-459-01	FRAME (UPPER)	
102	3-942-882-01	SPACER, FK	
103	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
104	3-942-921-11	FRAME (LOWER)	
* 105	A-7071-605-A	LJ-9P BOARD, COMPLETE	
106	3-713-786-51	SCREW (M2X3)	
107	3-943-959-11	SHEET, VM	
* 108	A-7063-165-A	AU-135P BOARD, COMPLETE	
* 109	3-947-355-01	PLATE, GROUND, VS	
* 110	A-7063-162-A	VS-93P BOARD, COMPLETE (AEP, UK model)	
* 110	A-7063-275-A	VS-93P BOARD, COMPLETE (E, Australian, Tourist model)	
111	3-943-007-01	CASE (LOWER), SHIELD, RP	
112	3-943-009-01	PLATE, SHIELD, FE	
113	3-943-006-01	CASE (UPPER), SHIELD, RP	
114	3-943-008-01	PLATE, SHIELD, RP CONNECTOR	
115	3-943-014-01	CUSHION, RUBBER	
* 116	3-947-347-01	CASE (LOWER), SHIELD, VC	
* 117	A-7063-163-A	VC-112P BOARD, COMPLETE	
118	3-719-601-01	SCREW (B2X5), TAPPING	
* 119	X-3941-473-1	CASE (UPPER) ASSY, SHIELD, VC	
*⚠120	A-7063-161-A	DD-47P BOARD, COMPLETE (DC-DC CONVERTER UNIT)	
* 121	3-947-352-01	CASE (UPPER), SHIELD, DD	
* 122	3-947-442-01	BRACKET (A), FITTING	
123	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
* 124	A-7063-164-A	CD-84P BOARD, COMPLETE	
125	3-947-268-01	SCREW (P TIGHT) (2), TAPPING	
126	A-7030-322-A	CCD ASSY (BOND)	
127	3-947-818-11	ADAPTOR (D), CCD	
128	1-547-558-21	FILTER BLOCK, OPTICAL	
129	3-947-820-11	RUBBER (D), SEAL	
130	A-7030-321-A	CCD BLOCK ASSY (BOND)	
* 131	3-947-821-01	SHEET (D), INSULATING	
IC875	8-752-607-39	IC ICX045BKA-2 (CCD IMAGER)	
W401	1-690-817-11	CABLE, FLAT	
W402	1-644-285-11	FP-572 FLEXIBLE BOARD	
W403	1-630-591-11	FP-182 FLEXIBLE BOARD	

5-4. CASSETTE COMPARTMENT HOLDER ASSEMBLY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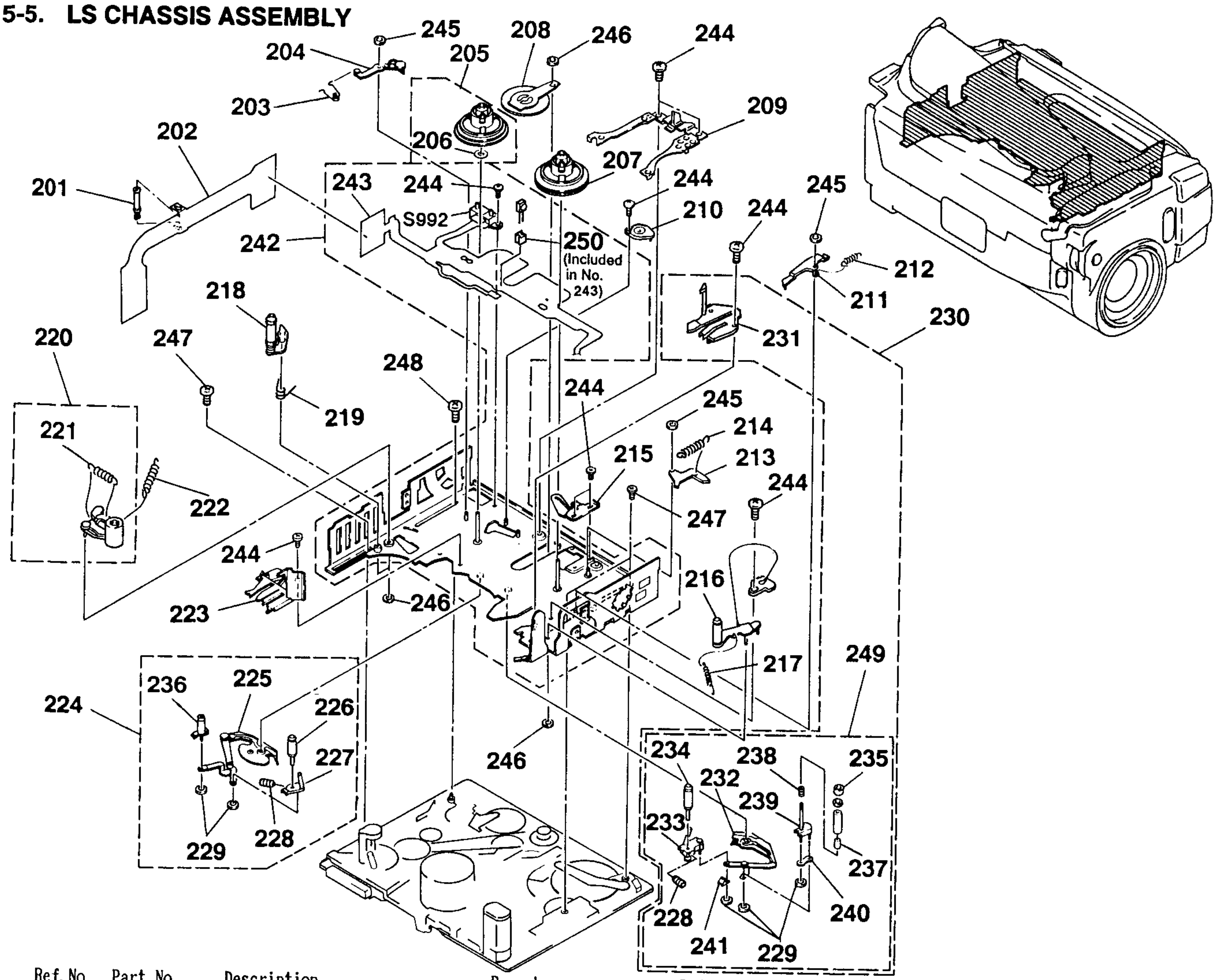
Ref. No.	Part No.	Description	Remark
151	A-7040-255-A	HOLDER BLOCK ASSY (L)	
152	X-3940-680-1	HOLDER ASSY (L)	
153	X-3940-677-1	ARM (T) ASSY (L), F	
154	3-739-872-01	SPRING, TENSION	
155	3-728-145-01	BEARING (T), MIDWAY GEAR	
156	X-3727-920-1	GEAR ASSY, MIDWAY	
157	X-3940-678-1	ARM (S) ASSY (L), F	
158	3-739-873-01	SPRING, TENSION	
159	3-728-146-01	BEARING (S), MIDWAY GEAR	
160	3-739-808-01	PLATE (2), ADJUSTMENT, C ARM	
161	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
162	A-7040-164-A	ARM BLOCK ASSY, TP	
163	3-509-127-00	SPRING, TENSION	
164	3-728-277-01	BAR, JOINT	
165	3-331-007-11	WASHER	
166	X-3940-991-1	PROTECTOR ASSY (2), T	
167	3-749-304-01	WASHER, STOPPER	
168	X-3739-809-1	DAMPER ASSY (2)	
169	3-942-924-01	BASE (L), LED	
170	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
171	3-943-055-01	FRAME (L), LS	
172	3-727-957-01	HOLDER (S), SENSOR	
173	3-727-954-01	HOLDER (T), SENSOR	
174	3-727-946-01	SUPPORT, LS	
175	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
176	A-7040-264-D	ROLLER BLOCK ASSY, HC	
177	3-321-393-11	WASHER, STOPPER	
178	3-943-439-02	SPRING, TORSION	
S991	1-572-611-11	SWITCH, LEAF (C LOCK)	

5-5. LS CHASSIS ASSEMBLY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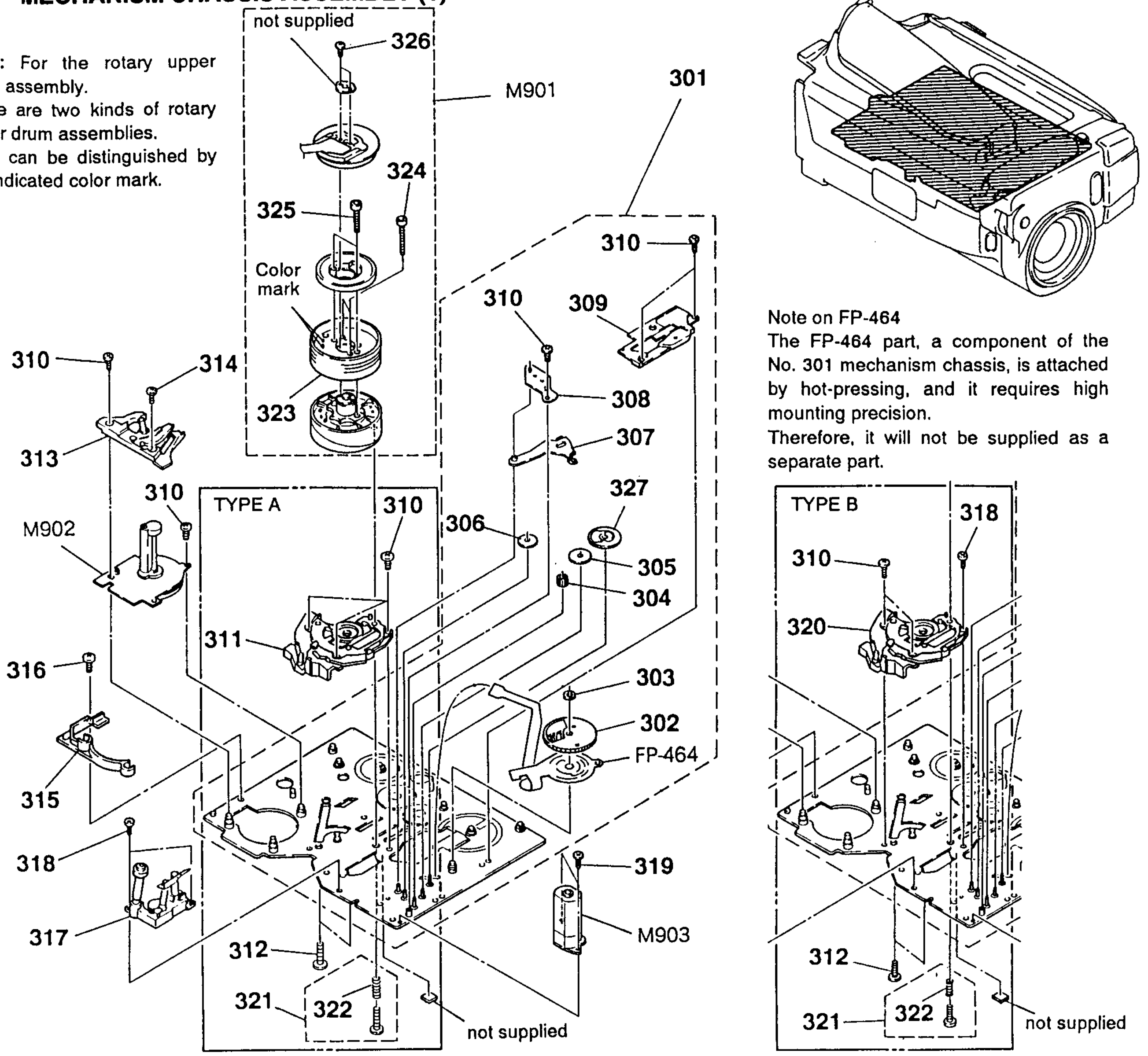
Ref. No.	Part No.	Description	Remark
201	3-739-807-01	SHAFT (2), FLEXIBLE ROTARY	
202	1-627-722-11	FP-149 FLEXIBLE BOARD	
203	3-732-068-01	SPRING (JD), RATCHET	
204	X-3728-005-1	RATCHET ASSY (JD), T	
205	X-3727-951-2	TABLE ASSY, REEL, TAKE-UP	
206	3-701-439-11	WASHER	
207	X-3727-952-1	TABLE ASSY, REEL, SUPPLY	
208	X-3727-926-1	ARM ASSY, GEAR	
209	X-3940-675-1	BASE ASSY (L), RL	
210	X-3727-914-4	CLUTCH ASSY, ONEWAY	
211	3-732-077-01	RATCHET (JD), S	
212	3-732-076-01	SPRING (JD), TENSION	
213	3-732-079-01	ARM (JD), S SOFT	
214	3-732-078-01	SPRING (JD), TENSION	
215	3-728-206-01	PLATE, CAM, LS	
216	X-3749-001-1	ARM ASSY (JD), TG1	
217	3-940-616-03	SPRING (JD), TENSION	
218	A-7040-252-A	ARM BLOCK ASSY (L), TG11	
219	3-727-939-01	SPRING (JD), TORSION	
220	A-7040-240-A	ARM BLOCK ASSY (JD), PINCH	
221	3-727-927-01	SPRING (POWER TENSION), TENSION	
222	3-732-089-01	SPRING (JD), TENSION	
223	3-728-244-01	RAIL (T), GUIDE	
224	A-7040-148-A	ARM (T) BLOCK ASSY, GUIDE	
225	X-3727-940-1	ARM (T) ASSY, GUIDE	
226	X-3728-004-1	ROLLER ASSY (2), TG8	

Ref. No.	Part No.	Description	Remark
227	X-3728-001-1	BASE ASSY (R), TG7	
228	3-728-290-01	SCREW (M1.2)	
229	3-331-007-11	WASHER	
230	A-7040-263-A	RAIL (S) BLOCK ASSY (3) (JD), GUIDE	
231	3-728-226-01	RAIL (S) (JD), GUIDE	
232	X-3727-941-1	ARM (S) ASSY, GUIDE	
233	X-3727-948-1	BASE ASSY, TG6	
234	X-3940-733-1	ROLLER ASSY (3), TG5	
235	3-943-822-01	FLANGE (P), TG4 UPPER	
236	X-3728-002-1	BASE ASSY (R), TG9	
237	3-728-048-01	SLEEVE, TG4	
238	3-728-023-01	SPRING, COMPRESSION	
239	X-3727-936-2	BASE ASSY, TG4	
240	3-728-053-01	PLATE, UNDER, TG4	
241	3-728-062-01	SPRING (6GB), LEAF	
242	A-7010-369-A	MD ASSY (1)	
243	A-7061-238-B	FP-115 BLOCK ASSY	
244	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
245	3-728-091-01	WASHER, STOPPER	
246	3-315-414-31	WASHER	
247	3-941-601-01	SCREW (M1.4X2.5), SPECIAL HEAD	
248	3-732-085-01	SCREW (1.2X1.6), SPECIAL HEAD	
249	A-7040-262-C	ARM (S) BLOCK ASSY (3), GUIDE	
250	3-732-046-01	HOLDER, LED	
S992	1-571-647-11	SWITCH PUSH (2 KEY) (REC PROOF, ME/MP)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)

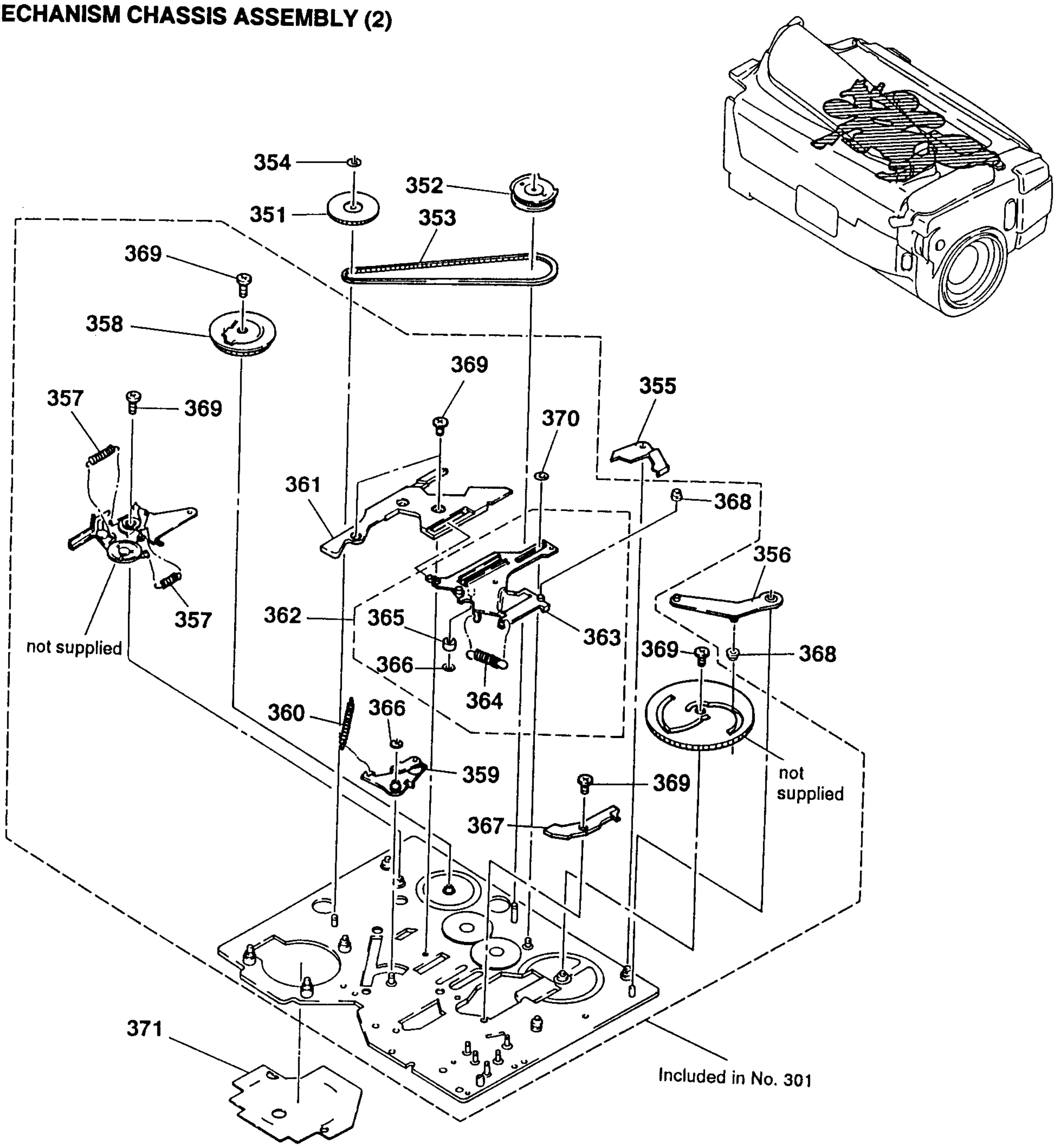
Note: For the rotary upper drum assembly.
There are two kinds of rotary upper drum assemblies.
They can be distinguished by the indicated color mark.

Note on FP-464
The FP-464 part, a component of the No. 301 mechanism chassis, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.



Ref. No.	Part No.	Description	Remark
301	A-7040-253-A	CHASSIS BLOCK ASSY (L)	
302	X-3727-915-1	GEAR ASSY, MODE	
303	3-579-788-01	WASHER, STOPPER	
304	3-728-149-01	GEAR, NO.0	
305	X-3727-904-1	GEAR ASSY, NO.2	
306	X-3727-903-1	GEAR ASSY, NO.1	
307	X-3727-906-1	ARM ASSY	
308	3-728-119-01	RETAINER, GEAR	
309	3-728-231-06	BASE, TG-1 CAM	
310	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
* 311	A-7040-222-D	BASE (M) BLOCK ASSY, DRUM (TYPE A)	
312	3-728-108-01	SCREW (M1.4X4.5)	
313	X-3941-027-2	RAIL (BASE) (3) ASSY (3), GUIDE	
314	3-732-084-01	SCREW (M1.4), SPECIAL HEAD	
315	3-732-064-01	COVER, ROTOR	
316	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
317	A-7040-289-A	BASE (1) BLOCK ASSY (2), RAIL	
318	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD	
319	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
* 320	A-7040-203-C	BASE (A) BLOCK ASSY, DRUM (TYPE B)	
321	X-3728-009-2	SCREW ASSY, FITTING	
322	3-743-633-01	SPRING, COMPRESSION	
323	A-7049-197-A	DRUM ASSY, UPPER, ROTARY (DGR-37-R-(1)) (COLOR MARK; GREEN, GREEN/RED, BLACK, BLACK/RED) (E, Australian, Tourist model)	
323	A-7049-198-A	DRUM ASSY, UPPER, ROTARY (DGR-37-R-(2)) (COLOR MARK; RED, RED/RED, BLUE, BLUE/RED) (E, Australian, Tourist model)	
323	A-7049-461-A	DRUM ASSY, UPPER, ROTARY (DGR-80-R-(1)) (COLOR MARK; GREEN, GREEN/RED, BLACK, BLACK/RED) (AEP, UK model)	
323	A-7049-464-A	DRUM ASSY, UPPER, ROTARY (DGR-80-R-(2)) (COLOR MARK ; RED, RED/RED, BLUE, BLUE/RED) (AEP, UK model)	
324	3-727-809-01	SCREW (M1.4X5), HEXAGON HOLE	
325	3-727-807-01	SCREW (M1.7X3.3), HEXAGON HOLE	
326	3-728-108-21	SCREW (M1.4X2.7)	
327	3-728-189-02	GEAR, NO.3	
M901	A-7048-214-A	DRUM BLOCK ASSY (DGH-37A-R) (E, Australian, Tourist model)	
M901	A-7048-534-A	DRUM BLOCK ASSY (DGH-80A-R) (AEP, UK model)	
M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)	
M903	1-541-607-21	MOTOR, DC (LA12G-344VA) (LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)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Ref. No.	Part No.	Description	Remark
351	X-3727-930-1	GEAR ASSY, CONVERSION	
352	X-3727-931-1	PULLEY ASSY, MIDWAY	
353	3-728-212-01	BELT, RELAY	
354	3-728-091-01	WASHER, STOPPER	
355	3-728-154-01	ARM, EJ	
356	3-941-980-01	ARM (T), LS	
357	3-728-065-01	SPRING, TENSION	
358	3-728-190-01	CAM (B)	
359	X-3727-924-2	ARM ASSY, GUIDE LOCK	
360	3-728-015-01	SPRING (POWER TENSION), TENSION	
361	3-728-228-03	SUPPORT (T), GL	
362	A-7040-153-A	SLIDER BLOCK ASSY, GL	
363	X-3727-942-1	SLIDER ASSY, GL	
364	3-727-929-01	SPRING (POWER TENSION), TENSION	
365	3-728-144-01	ROLLER, GL	
366	3-331-007-11	WASHER	
367	3-728-213-01	SUPPORT (S), GL	
368	3-728-109-01	ROLLER, LS	
369	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
370	3-315-384-31	WASHER, STOPPER	
371	3-942-901-01	COVER (L), CAPSTAN	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-7063-165-A	AU-135P BOARD, COMPLETE			

****

(Ref. No. 1000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C605	1-164-634-11	CERAMIC CHIP	1uF		16V
C606	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C607	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C608	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C609	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C610	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C611	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C612	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C613	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C615	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C616	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C617	1-164-634-11	CERAMIC CHIP	1uF		16V
C618	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C619	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C620	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C621	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C623	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C624	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C625	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C626	1-128-004-11	ELECT CHIP	10uF	20%	16V
C627	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C629	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C630	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C631	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C633	1-164-634-11	CERAMIC CHIP	1uF		16V
C634	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C635	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C636	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C637	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C638	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C639	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C640	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C641	1-126-209-11	ELECT CHIP	100uF	20%	4V
C642	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C643	1-128-004-11	ELECT CHIP	10uF	20%	16V
C645	1-126-209-11	ELECT CHIP	100uF	20%	4V
C646	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C647	1-164-634-11	CERAMIC CHIP	1uF		16V
C648	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C649	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C650	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C651	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C653	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C654	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C655	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C656	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C657	1-128-004-11	ELECT CHIP	10uF	20%	16V
C658	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C661	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C662	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C663	1-164-634-11	CERAMIC CHIP	1uF		16V
C664	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C666	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C668	1-126-209-11	ELECT CHIP	100uF	20%	4V
C670	1-164-634-11	CERAMIC CHIP	1uF		16V
C672	1-162-638-11	CERAMIC CHIP	1uF		16V
C673	1-162-638-11	CERAMIC CHIP	1uF		16V
C674	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C675	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C676	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C677	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C678	1-128-003-11	ELECT CHIP	22uF	20%	4V
C679	1-128-003-11	ELECT CHIP	22uF	20%	4V
C680	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C681	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C683	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C684	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C687	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C688	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C689	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C690	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C691	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C692	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C694	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C695	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C696	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

< CONNECTOR >

CN601	1-691-539-11	CONNECTOR, BOARD TO BOARD 30P			
CN602	1-569-775-21	PIN, CONNECTOR 5P			

< FILTER >

FL601	1-236-837-21	FILTER, BAND PASS (1.5MHz)			
FL602	1-236-838-21	FILTER, BAND PASS (1.7MHz)			

< IC >

IC601	8-759-823-19	IC	CXA1488RR		
IC602	8-759-823-19	IC	CXA1488RR		
IC603	8-759-823-21	IC	CXA1536QQ		
IC604	8-759-509-05	IC	XRU4066BF		

< TRANSISTOR >

Q601	8-729-823-00	TRANSISTOR	2SA1622-5.6.7		
Q603	8-729-402-81	TRANSISTOR	XN4501		
Q604	8-729-402-81	TRANSISTOR	XN4501		
Q605	8-729-905-18	TRANSISTOR	DTC144EU		
Q606	8-729-402-81	TRANSISTOR	XN4501		

< RESISTOR >

R601	1-216-849-11	METAL CHIP	220K	5%	1/16W
R603	1-216-837-11	METAL CHIP	22K	5%	1/16W
R604	1-216-801-11	METAL CHIP	22	5%	1/16W
R605	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W
R608	1-216-840-11	METAL CHIP	39K	5%	1/16W
R609	1-216-851-11	METAL CHIP	330K	5%	1/16W
R610	1-216-835-11	METAL CHIP	15K	5%	1/16W
R611	1-216-845-11	METAL CHIP	100K	5%	1/16W
R613	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R614	1-216-821-11	METAL CHIP	1K	5%	1/16W
R617	1-216-839-11	METAL CHIP	33K	5%	1/16W
R618	1-216-864-11	METAL CHIP	0	5%	1/16W
R619	1-216-833-11	METAL CHIP	10K	5%	1/16W
R620	1-216-849-11	METAL CHIP	220K	5%	1/16W
R622	1-216-837-11	METAL CHIP	22K	5%	1/16W
R623	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W
R625	1-216-835-11	METAL CHIP	15K	5%	1/16W
R627	1-216-851-11	METAL CHIP	330K	5%	1/16W
R628	1-216-840-11	METAL CHIP	39K	5%	1/16W
R629	1-216-835-11	METAL CHIP	15K	5%	1/16W
R632	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R633	1-216-821-11	METAL CHIP	1K	5%	1/16W
R634	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R635	1-216-817-11	METAL CHIP	470	5%	1/16W
R637	1-216-839-11	METAL CHIP	33K	5%	1/16W
R638	1-216-864-11	METAL CHIP	0	5%	1/16W
R639	1-216-833-11	METAL CHIP	10K	5%	1/16W
R640	1-216-848-11	METAL CHIP	180K	5%	1/16W
R642	1-216-845-11	METAL CHIP	100K	5%	1/16W
R643	1-216-817-11	METAL CHIP	470	5%	1/16W
R645	1-216-813-11	METAL CHIP	220	5%	1/16W
R646	1-216-819-11	METAL CHIP	680	5%	1/16W
R647	1-216-821-11	METAL CHIP	1K	5%	1/16W
R648	1-216-864-11	METAL CHIP	0	5%	1/16W
R649	1-216-821-11	METAL CHIP	1K	5%	1/16W
R651	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R652	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R653	1-216-795-11	METAL CHIP	6.8K	0.50%	1/16W
R654	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R655	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R656	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R657	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R658	1-218-708-11	METAL CHIP	4.7K	0.50%	1/16W
R659	1-218-716-11	METAL CHIP	10K	0.50%	1/16W
R661	1-216-821-11	METAL CHIP	1K	5%	1/16W
R662	1-216-821-11	METAL CHIP	1K	5%	1/16W
R663	1-216-834-11	METAL CHIP	12K	5%	1/16W
R664	1-216-833-11	METAL CHIP	10K	5%	1/16W
R666	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R667	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R668	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R669	1-216-821-11	METAL CHIP	1K	5%	1/16W
R670	1-216-821-11	METAL CHIP	1K	5%	1/16W

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* A-7063-164-A CD-84P BOARD, COMPLETE

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(Ref. No. 1000 Series)

< CAPACITOR >

C875	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C876	1-128-013-11	ELECT CHIP	1uF	20%	50V
C877	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C878	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C879	1-162-637-11	CERAMIC CHIP	0.47uF		16V
C880	1-126-607-11	ELECT CHIP	47uF	20%	4V
C881	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C882	1-128-004-11	ELECT CHIP	10uF	20%	16V
C883	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C884	1-164-156-11	CERAMIC CHIP	0.1uF		25V

< CONNECTOR >

CN875	1-573-523-21	CONNECTOR, BOARD TO BOARD 16P			

< DIODE >

Ref. No.	Part No.	Description	Remark
D875	8-719-800-76	DIODE 1SS226	
D876	8-719-404-46	DIODE MA110	
D877	8-719-820-05	DIODE 1SS181	
D878	8-719-404-46	DIODE MA110	

< COIL >

Ref. No.	Part No.	Description	Remark
L875	1-412-064-11	INDUCTOR CHIP 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q875	8-729-927-XX	TRANSISTOR 2SC4617TL	
Q876	8-729-927-68	TRANSISTOR UMW1	
Q877	8-729-232-86	TRANSISTOR 2SK1875	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R875	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R876	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R877	1-216-819-11	METAL CHIP 680 5% 1/16W	
R878	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R879	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R880	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R881	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R882	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R883	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R884	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R885	1-216-809-11	METAL CHIP 100 5% 1/16W	

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* A-7071-606-A CN-64P BOARD, COMPLETE

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(Ref. No. 1000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C550	1-164-346-11	CERAMIC CHIP 1uF 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN503	1-691-519-11	CONNECTOR, BOARD TO BOARD 30P	

< FLAT CABLE >

Ref. No.	Part No.	Description	Remark
W501	1-690-818-11	CABLE, FLAT	

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* A-7063-161-A DD-47P BOARD, COMPLETE

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(Ref. No. 4000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C901	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C902	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C903	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C905	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C906	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C907	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C908	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C909	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	
C910	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C911	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C912	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C913	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C914	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C915	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C916	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C919	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C920	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C921	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C922	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C923	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C924	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C925	1-162-638-11	CERAMIC CHIP 1uF 16V	
C926	1-162-638-11	CERAMIC CHIP 1uF 16V	
C927	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C928	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C929	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C930	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C931	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C932	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C933	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C934	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C935	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C936	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C937	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C938	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C939	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C940	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C941	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C942	1-126-204-11	ELECT CHIP 47uF 20% 16V	
C943	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C944	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C945	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C946	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C947	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	

DD-47P

Ref. No.	Part No.	Description	Remark
C948	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN901	1-569-775-21	PIN, CONNECTOR 5P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D901	8-719-981-59	DIODE FC805	
D902	8-719-941-09	DIODE DAP202U	
D903	8-719-988-62	DIODE 1SS355	

< IC >

Ref. No.	Part No.	Description	Remark
IC901	8-759-060-94	IC MB3785APFV-G-BND-ER	
IC902	8-759-998-98	IC LM358D	

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-424-643-11	COIL, CHOKE 10uH	
L902	1-412-064-11	INDUCTOR CHIP 100uH	
L903	1-412-067-21	INDUCTOR CHIP 330uH	
L904	1-412-056-11	INDUCTOR CHIP 4.7uH	
L905	1-424-643-11	COIL, CHOKE 10uH	
L906	1-424-641-11	COIL, CHOKE 22uH	
L907	1-412-056-11	INDUCTOR CHIP 4.7uH	
L908	1-412-058-11	INDUCTOR CHIP 10uH	
L909	1-412-056-11	INDUCTOR CHIP 4.7uH	
L910	1-412-056-11	INDUCTOR CHIP 4.7uH	
L911	1-412-056-11	INDUCTOR CHIP 4.7uH	
L912	1-412-058-11	INDUCTOR CHIP 10uH	
L913	1-424-643-11	COIL, CHOKE 10uH	
L914	1-424-641-11	COIL, CHOKE 22uH	
L915	1-424-642-11	COIL, CHOKE 47uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q901	8-729-905-18	TRANSISTOR DTC144EU	
Q902	8-729-403-27	TRANSISTOR XN4401	
Q903	8-729-804-41	TRANSISTOR 2SB1122-S	
Q904	8-729-905-12	TRANSISTOR DTA144EU	
Q905	8-729-015-61	TRANSISTOR 2SJ316-TD	
Q906	8-729-823-84	TRANSISTOR FP102-TL	
Q907	8-729-805-25	TRANSISTOR 2SB1121-S	
Q908	8-729-822-84	TRANSISTOR 2SB1202FAST	
Q909	8-729-823-82	TRANSISTOR FP101	
Q910	8-729-823-82	TRANSISTOR FP101	
Q911	8-729-907-26	TRANSISTOR IMX1	
Q912	8-729-905-12	TRANSISTOR DTA144EU	
Q913	8-729-905-18	TRANSISTOR DTC144EU	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R901	1-218-708-11	METAL CHIP 4.7K 0.50% 1/16W	
R902	1-218-724-11	METAL CHIP 22K 0.50% 1/16W	
R903	1-218-698-11	METAL CHIP 1.8K 0.50% 1/16W	
R904	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R905	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R906	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R907	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R908	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R909	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R910	1-216-811-11	METAL CHIP 150 5% 1/16W	
R911	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R912	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R913	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R914	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R915	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R916	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R917	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R918	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R919	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R920	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R921	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R922	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R923	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R924	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R925	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R926	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R927	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R928	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R929	1-216-813-11	METAL CHIP 220 5% 1/16W	
R930	1-216-819-11	METAL CHIP 680 5% 1/16W	
R931	1-216-819-11	METAL CHIP 680 5% 1/16W	
R932	1-216-819-11	METAL CHIP 680 5% 1/16W	
R933	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R934	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R935	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R936	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R937	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R938	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R939	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R940	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R941	1-216-043-00	METAL CHIP 560 5% 1/10W	
R942	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R943	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R946	1-218-680-11	METAL CHIP 330 0.50% 1/16W	
R947	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	

Ref.No.	Part No.	Description	Remark
R948	1-218-688-11	METAL CHIP 680 0.50% 1/16W	
R949	1-218-295-11	METAL CHIP 5.6K 0.50% 1/16W	
R950	1-218-716-11	METAL CHIP 10K 0.50% 1/16W	
R951	1-216-864-11	METAL CHIP 0 5% 1/16W	

< TRANSFORMER >

Ref.No.	Part No.	Description	Remark
T901	1-450-785-21	TRANSFORMER, CONVERTER	

< FLAT CABLE >

Ref.No.	Part No.	Description	Remark
W401	1-690-817-11	CABLE, FLAT	

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Ref.No.	Part No.	Description	Remark
*	A-7061-238-B	FP-115 BOARD, COMPLETE *********************** (Ref. No. 8000 Series)	
	3-727-954-01	HOLDER (T), SENSOR	
	3-727-957-01	HOLDER (S), SENSOR	
	3-732-046-01	HOLDER, LED	

< DIODE >

Ref.No.	Part No.	Description	Remark
D991	8-719-988-42	DIODE GL453S	
D992	8-719-988-42	DIODE GL453S	

< HOLE ELEMENT >

Ref.No.	Part No.	Description	Remark
H991	1-808-448-11	ELEMENT, HALL (CHIP TYPE)	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q991	8-729-907-25	TRANSISTOR PT4850F	
Q992	8-729-907-25	TRANSISTOR PT4850F	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R991	1-216-817-11	METAL CHIP 470 5% 1/16W	

< SWITCH >

Ref.No.	Part No.	Description	Remark
S992	1-571-647-11	SWITCH, PUSH (2 KEY)	
S991	1-572-611-11	SWITCH, LEAF	

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Ref.No.	Part No.	Description	Remark
*	A-7063-166-A	LC-40P BOARD, COMPLETE *************************************** (EXCEPT AEP : BLUE model)	
*	A-7063-258-A	LC-40P BOARD, COMPLETE (AEP:BLUE model) *************************************** (Ref. No. 4000 Series)	

< CAPACITOR >

Ref.No.	Part No.	Description	Remark
C501	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C502	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C503	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C504	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C505	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C506	1-164-346-11	CERAMIC CHIP 1uF 16V	
C507	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C509	1-164-346-11	CERAMIC CHIP 1uF 16V	
C511	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C512	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C514	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C516	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN502	1-691-499-11	CONNECTOR, FFC/FPC 20P	

< DIODE >

Ref.No.	Part No.	Description	Remark
D501	8-719-421-27	DIODE MA728	
D504	8-719-940-45	DIODE DWA010	
D505	8-719-988-62	DIODE 1SS355	

< IC >

Ref.No.	Part No.	Description	Remark
IC501	8-759-059-51	IC uPD75316GF-SGX3200	
IC502	8-759-056-84	IC S-8420AF	
IC503	8-759-145-63	IC uPD7564G-540	

< COIL >

Ref.No.	Part No.	Description	Remark
L501	1-412-062-11	INDUCTOR CHIP 47uH	

< LIQUID CRYSTAL DISPLAY >

Ref.No.	Part No.	Description	Remark
LCD501	1-809-671-21	DISPLAY PANEL, LIQUID CRYSTAL	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q501	8-729-905-15	TRANSISTOR DTC144WU	
Q502	8-729-905-12	TRANSISTOR DTA144EU	
Q504	8-729-905-XX	TRANSISTOR DTC114TU	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R501	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R502	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R503	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R504	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R505	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R506	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R507	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R508	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R510	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R512	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R513	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R514	1-216-864-11	METAL CHIP 0 5% 1/16W	
R515	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R516	1-216-809-11	METAL CHIP 100 5% 1/16W	
R517	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R518	1-216-864-11	METAL CHIP 0 5% 1/16W	
R519	1-216-296-00	METAL CHIP 0 5% 1/8W	
R520	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R521	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
		< NETWORK RESISTOR >	
RB501	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB502	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)	
RB503	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)	
RB504	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)	
RB505	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB506	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB507	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB508	1-236-412-11	NETWORK, RES 1.0K	
RB509	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB510	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)	
RB512	1-236-432-11	NETWORK, RES 47K	
RB514	1-236-432-11	NETWORK, RES 47K	
RB515	1-236-400-11	NETWORK, RES 100	
RB516	1-236-412-11	NETWORK, RES 1.0K	
		< SWITCH >	
S507	1-692-085-11	SWITCH, ROTARY (EXPOSURE DIAL)	
		< VIBRATOR >	
X501	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)	
X502	1-579-049-21	VIBRATOR, CRYSTAL (32KHz)	
X503	1-579-551-11	VIBRATOR, CERAMIC (700KHz)	

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Ref. No.	Part No.	Description	Remark
*	A-7071-605-A	LJ-9P BOARD, COMPLETE ********************** (Ref. No. 5000 Series)	
		< CAPACITOR >	
C971	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C972	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
* CN971	1-580-056-21	PIN, CONNECTOR 3P	
		< DIODE >	
D973	8-719-988-62	DIODE 1SS355	
		< JACK >	
J971	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		< COIL >	
L971	1-410-369-11	INDUCTOR CHIP 1uH	
L972	1-410-369-11	INDUCTOR CHIP 1uH	
L973	1-410-369-11	INDUCTOR CHIP 1uH	

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Ref. No.	Part No.	Description	Remark
*	A-7063-167-A	MA-143P BOARD, COMPLETE *********************** (Ref. No. 5000 Series)	
*	3-947-506-01	PLATE, GROUND, MICROPHONE	
		< CAPACITOR >	
C556	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C557	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C558	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C559	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C561	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C562	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C563	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C564	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C566	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C567	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C568	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C569	1-135-091-00	TANTALUM CHIP 1uF 20% 16V	
C570	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	
C571	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	
C572	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C574	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C575	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C577	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C578	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C579	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	

Ref.No.	Part No.	Description	Remark
C580	1-135-091-00	TANTALUM CHIP 1uF 20%	16V
C581	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C582	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C584	1-164-232-11	CERAMIC CHIP 0.01uF	50V
C585	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C586	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C591	1-124-778-00	ELECT CHIP 22uF 20%	6.3V
C592	1-162-963-11	CERAMIC CHIP 680PF 10%	50V

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN551	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P	
CN552	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P	
CN553	1-573-768-21	PIN, CONNECTOR (1.5MM) (SMD) 5P	
CN554	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P	

< DIODE >

Ref.No.	Part No.	Description	Remark
D551	8-719-404-46	DIODE MA110	
D552	8-719-404-46	DIODE MA110	

< IC >

Ref.No.	Part No.	Description	Remark
IC551	8-759-062-23	IC CXA-1618N-E2	
IC552	8-741-100-63	IC SBX1619-51	
IC553	8-759-998-98	IC LM358D	

< JACK >

Ref.No.	Part No.	Description	Remark
J551	1-691-737-11	JACK, SMALL (MIC)	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q551	8-729-010-80	TRANSISTOR FC13	
Q555	8-729-822-97	TRANSISTOR 2SC4211-5.6.7	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R551	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R552	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R553	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R554	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R555	1-216-841-11	METAL CHIP 47K 5%	1/16W
R556	1-216-841-11	METAL CHIP 47K 5%	1/16W
R557	1-216-841-11	METAL CHIP 47K 5%	1/16W
R558	1-216-845-11	METAL CHIP 100K 5%	1/16W
R559	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R560	1-216-857-11	METAL CHIP 1M 5%	1/16W
R561	1-216-837-11	METAL CHIP 22K 5%	1/16W
R566	1-216-854-11	METAL CHIP 560K 5%	1/16W
R567	1-216-864-11	METAL CHIP 0 5%	1/16W
R568	1-216-857-11	METAL CHIP 1M 5%	1/16W
R569	1-216-857-11	METAL CHIP 1M 5%	1/16W
R570	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R571	1-216-833-11	METAL CHIP 10K 5%	1/16W
R572	1-216-833-11	METAL CHIP 10K 5%	1/16W
R573	1-216-830-11	METAL CHIP 5.6K 5%	1/16W
R575	1-216-837-11	METAL CHIP 22K 5%	1/16W
R576	1-216-839-11	METAL CHIP 33K 5%	1/16W
R577	1-216-834-11	METAL CHIP 12K 5%	1/16W
R580	1-216-833-11	METAL CHIP 10K 5%	1/16W
R581	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R582	1-216-833-11	METAL CHIP 10K 5%	1/16W
R584	1-216-830-11	METAL CHIP 5.6K 5%	1/16W
R585	1-216-833-11	METAL CHIP 10K 5%	1/16W
R586	1-216-837-11	METAL CHIP 22K 5%	1/16W
R587	1-216-839-11	METAL CHIP 33K 5%	1/16W
R588	1-216-834-11	METAL CHIP 12K 5%	1/16W
R589	1-216-805-11	METAL CHIP 47 5%	1/16W
R590	1-216-295-00	METAL CHIP 0 5%	1/10W
R591	1-216-295-00	METAL CHIP 0 5%	1/10W
R592	1-216-295-00	METAL CHIP 0 5%	1/10W
R593	1-216-821-11	METAL CHIP 1K 5%	1/16W
R594	1-216-821-11	METAL CHIP 1K 5%	1/16W

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* A-7071-607-A MF-175P BOARD, COMPLETE

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(EXCEPT AEP:BLUE model)

* A-7071-648-A MF-175P BOARD, COMPLETE (AEP:BLUE model)

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(Ref. No. 6000 Series)

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN554	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P	
CN996	1-691-473-21	CONNECTOR, FFC/FPC 7P	

< SWITCH >

Ref.No.	Part No.	Description	Remark
S996	1-241-865-11	RES, VAR, CARBON 10K (FOCUS MANUAL)	
S997	1-571-787-41	SWITCH, TACTILE (FADER)	

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* A-7063-163-A VC-112P BOARD, COMPLETE

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(Ref. No. 2000 Series)

< CAPACITOR >

Ref.No.	Part No.	Description	Remark
C701	1-135-149-21	TANTALUM CHIP 2.2uF 20%	10V
C702	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C703	1-164-361-11	CERAMIC CHIP 0.047uF	16V
C705	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C706	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C707	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C708	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C709	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C710	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C711	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V

VC-112P

Ref. No.	Part No.	Description			Remark
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C713	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C714	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C717	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C718	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C719	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C721	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C722	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C723	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C724	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C725	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C726	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C727	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C728	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C729	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C730	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C731	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C734	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C737	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C738	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C739	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C741	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C742	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C744	1-162-638-11	CERAMIC CHIP	1uF		16V
C745	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C747	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C748	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C750	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C751	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C752	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C802	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C803	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C808	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C809	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C810	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C813	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C814	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C815	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C816	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C818	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C819	1-164-360-11	CERAMIC CHIP	0.1uF		16V

Ref. No.	Part No.	Description			Remark
C820	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C823	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C827	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C830	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C832	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C838	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C841	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C851	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C852	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C853	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C855	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C857	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C858	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C859	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C860	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C861	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C863	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C864	1-162-638-11	CERAMIC CHIP	1uF		16V
C866	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C868	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C869	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C870	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C871	1-124-778-00	ELECT CHIP	22uF	20%	6.3V

< CONNECTOR >

CN701	1-573-372-21	CONNECTOR, BOARD TO BOARD 18P			
CN801	1-573-525-21	CONNECTOR, BOARD TO BOARD 16P			
CN851	1-573-361-11	CONNECTOR, FFC/FPC 21P			

< TRIMMER >

CT801	1-141-356-11	CAP, ADJ			

< FILTER >

FL701	1-236-834-21	FILTER, LOW PASS			
FL702	1-415-751-21	DELAY LINE, LC (YH)			

Ref. No.	Part No.	Description	Remark
		< IC >	
IC701	8-759-243-19	IC TC7SU04F	
IC702	8-759-064-36	IC MB88346BPFV	
IC703	8-759-710-07	IC NJM2234M	
IC704	8-752-348-92	IC CXD2101AR	
IC705	8-759-069-19	IC CXD2103AR	
IC706	8-752-337-36	IC CXD2104N	
IC707	8-752-344-53	IC CXD2100Q	
IC709	8-752-834-64	IC CXP80624-281R	
IC710	8-759-519-14	IC MB8464-15LLPFTN	
IC711	8-759-518-81	IC CXD2112R	
IC712	8-759-044-78	IC AK6420F	
IC801	8-752-337-34	IC CXD1257R	
IC802	8-752-056-39	IC CXA1507BR	
IC803	8-752-053-26	IC CXA1399Q	
IC804	8-752-327-48	IC CXD1250N	
IC805	8-752-054-61	IC CXA1390AR	
IC851	8-759-701-24	IC NJM3414M	
IC852	8-759-998-96	IC LM324D	
IC853	8-759-058-47	IC MPC1724VMEL	
IC854	8-759-823-51	IC LB1830M	
IC855	8-759-059-07	IC LC78865M	
		< COIL >	
L701	1-412-006-31	INDUCTOR CHIP 10uH	
L703	1-412-052-21	INDUCTOR CHIP 1uH	
L704	1-412-006-31	INDUCTOR CHIP 10uH	
L705	1-412-979-21	INDUCTOR 1uH	
L706	1-412-058-11	INDUCTOR CHIP 10uH	
L707	1-412-006-31	INDUCTOR CHIP 10uH	
L708	1-412-979-21	INDUCTOR 1uH	
L709	1-412-058-11	INDUCTOR CHIP 10uH	
L710	1-412-052-21	INDUCTOR CHIP 1uH	
L711	1-412-052-21	INDUCTOR CHIP 1uH	
L712	1-412-052-21	INDUCTOR CHIP 1uH	
L714	1-412-006-31	INDUCTOR CHIP 10uH	
L715	1-412-058-11	INDUCTOR CHIP 10uH	
L717	1-412-058-11	INDUCTOR CHIP 10uH	
L718	1-412-006-31	INDUCTOR CHIP 10uH	
L720	1-412-006-31	INDUCTOR CHIP 10uH	
L721	1-410-391-11	INDUCTOR CHIP 68uH	
L801	1-412-058-11	INDUCTOR CHIP 10uH	
L802	1-412-006-31	INDUCTOR CHIP 10uH	
L803	1-412-058-11	INDUCTOR CHIP 10uH	
L804	1-412-058-11	INDUCTOR CHIP 10uH	
L851	1-412-058-11	INDUCTOR CHIP 10uH	
L852	1-412-063-21	INDUCTOR CHIP 68uH	
L853	1-412-058-11	INDUCTOR CHIP 10uH	
		< TRANSISTOR >	
Q701	8-729-928-87	TRANSISTOR DTC124EE	
Q702	8-729-427-74	TRANSISTOR XP4601	
Q703	8-729-427-74	TRANSISTOR XP4601	
Q704	8-729-928-19	TRANSISTOR 2SA1774R	
Q705	8-729-928-81	TRANSISTOR DTC144EE	
Q706	8-729-927-XX	TRANSISTOR 2SC4617TL	
Q707	8-729-928-36	TRANSISTOR DTA114EE	
Q708	8-729-927-97	TRANSISTOR 2SC4617TL	
Q709	8-729-427-72	TRANSISTOR XP4501	
Q801	8-729-927-XX	TRANSISTOR 2SC4617TL	
Q802	8-729-427-70	TRANSISTOR XP4401	
Q851	8-729-927-XX	TRANSISTOR 2SC4617TL	
Q852	8-729-907-00	TRANSISTOR DTC114EU	
Q853	8-729-427-70	TRANSISTOR XP4401	
		< RESISTOR >	
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R703	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R704	1-216-815-11	METAL CHIP 330 5% 1/16W	
R705	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R706	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R707	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R708	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R709	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R710	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R712	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R713	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R714	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R715	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R716	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R718	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R719	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R723	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R724	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R725	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R727	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R728	1-216-813-11	METAL CHIP 220 5% 1/16W	
R729	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R730	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R732	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R733	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R734	1-216-817-11	METAL CHIP 470 5% 1/16W	
R735	1-216-834-11	METAL CHIP 12K 5% 1/16W	

Ref. No.	Part No.	Description			Remark
R736	1-216-864-11	METAL CHIP	0	5%	1/16W
R737	1-216-821-11	METAL CHIP	1K	5%	1/16W
R738	1-216-821-11	METAL CHIP	1K	5%	1/16W
R739	1-216-833-11	METAL CHIP	10K	5%	1/16W
R742	1-216-821-11	METAL CHIP	1K	5%	1/16W
R744	1-216-833-11	METAL CHIP	10K	5%	1/16W
R745	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R748	1-216-864-11	METAL CHIP	0	5%	1/16W
R749	1-216-841-11	METAL CHIP	47K	5%	1/16W
R750	1-216-842-11	METAL CHIP	56K	5%	1/16W
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W
R752	1-216-817-11	METAL CHIP	470	5%	1/16W
R753	1-216-834-11	METAL CHIP	12K	5%	1/16W
R754	1-216-821-11	METAL CHIP	1K	5%	1/16W
R755	1-216-821-11	METAL CHIP	1K	5%	1/16W
R756	1-216-857-11	METAL CHIP	1M	5%	1/16W
R757	1-216-857-11	METAL CHIP	1M	5%	1/16W
R758	1-216-841-11	METAL CHIP	47K	5%	1/16W
R759	1-216-821-11	METAL CHIP	1K	5%	1/16W
R760	1-216-857-11	METAL CHIP	1M	5%	1/16W
R762	1-216-821-11	METAL CHIP	1K	5%	1/16W
R768	1-216-837-11	METAL CHIP	22K	5%	1/16W
R769	1-216-821-11	METAL CHIP	1K	5%	1/16W
R770	1-216-821-11	METAL CHIP	1K	5%	1/16W
R771	1-216-821-11	METAL CHIP	1K	5%	1/16W
R774	1-216-821-11	METAL CHIP	1K	5%	1/16W
R775	1-216-833-11	METAL CHIP	10K	5%	1/16W
R776	1-216-841-11	METAL CHIP	47K	5%	1/16W
R777	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R778	1-216-839-11	METAL CHIP	33K	5%	1/16W
R779	1-216-833-11	METAL CHIP	10K	5%	1/16W
R780	1-216-821-11	METAL CHIP	1K	5%	1/16W
R781	1-216-833-11	METAL CHIP	10K	5%	1/16W
R782	1-216-813-11	METAL CHIP	220	5%	1/16W
R783	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W
R784	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R785	1-216-841-11	METAL CHIP	47K	5%	1/16W
R787	1-216-821-11	METAL CHIP	1K	5%	1/16W
R788	1-216-821-11	METAL CHIP	1K	5%	1/16W
R791	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R792	1-216-857-11	METAL CHIP	1M	5%	1/16W
R793	1-216-821-11	METAL CHIP	1K	5%	1/16W
R794	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R795	1-216-815-11	METAL CHIP	330	5%	1/16W
R796	1-216-817-11	METAL CHIP	470	5%	1/16W
R797	1-216-818-11	METAL CHIP	560	5%	1/16W
R799	1-216-857-11	METAL CHIP	1M	5%	1/16W
R800	1-216-309-00	METAL CHIP	5.6	5%	1/10W
R801	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref. No.	Part No.	Description			Remark
R802	1-216-835-11	METAL CHIP	15K	5%	1/16W
R803	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R804	1-216-833-11	METAL CHIP	10K	5%	1/16W
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W
R806	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R807	1-216-818-11	METAL CHIP	560	5%	1/16W
R808	1-216-801-11	METAL CHIP	22	5%	1/16W
R810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R812	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R813	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R816	1-216-833-11	METAL CHIP	10K	5%	1/16W
R819	1-216-805-11	METAL CHIP	47	5%	1/16W
R821	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W
R823	1-218-721-11	METAL CHIP	16K	0.50%	1/16W
R825	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R830	1-216-821-11	METAL CHIP	1K	5%	1/16W
R851	1-216-837-11	METAL CHIP	22K	5%	1/16W
R852	1-216-821-11	METAL CHIP	1K	5%	1/16W
R853	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R854	1-216-833-11	METAL CHIP	10K	5%	1/16W
R855	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R856	1-216-837-11	METAL CHIP	22K	5%	1/16W
R857	1-216-848-11	METAL CHIP	180K	5%	1/16W
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W
R860	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R861	1-216-821-11	METAL CHIP	1K	5%	1/16W
R862	1-216-848-11	METAL CHIP	180K	5%	1/16W
R863	1-216-855-11	METAL CHIP	680K	5%	1/16W
R864	1-216-134-00	METAL CHIP	2.2	5%	1/8W
R865	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R866	1-216-820-11	METAL CHIP	820	5%	1/16W
R867	1-216-837-11	METAL CHIP	22K	5%	1/16W
R868	1-216-833-11	METAL CHIP	10K	5%	1/16W
R870	1-216-841-11	METAL CHIP	47K	5%	1/16W
R872	1-216-851-11	METAL CHIP	330K	5%	1/16W
R873	1-216-816-11	METAL CHIP	390	5%	1/16W
R874	1-216-842-11	METAL CHIP	56K	5%	1/16W

< NETWORK RESISTOR >

RB701	1-236-420-11	NETWORK, RES	4.7K
RB702	1-236-432-11	NETWORK, RES	47K
RB703	1-236-412-11	NETWORK, RES	1.0K
RB704	1-236-416-11	NETWORK, RES	2.2K
RB705	1-236-416-11	NETWORK, RES	2.2K
RB706	1-236-412-11	NETWORK, RES	1.0K
RB707	1-236-412-11	NETWORK, RES	1.0K
RB708	1-236-412-11	NETWORK, RES	1.0K

Ref. No.	Part No.	Description			Remark
		< VIBRATOR >			
X701	1-579-369-21	VIBRATOR			
X801	1-579-621-11	VIBRATOR, CRYSTAL (28.6363MHz)			

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*	A-7062-880-A	VF-42P BOARD, COMPLETE ***********************			
					(Ref. No. 7000 Series)
	1-540-019-21	SOCKET ASSY, CRT			
	3-942-888-01	HOLDER, LED			
		< CAPACITOR >			
C501	1-126-176-11	ELECT	220uF	20%	10V
C502	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C503	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
⚠C504	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
⚠C505	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V
⚠C506	1-162-625-11	CERAMIC CHIP	0.0047uF	5%	50V
C507	1-127-515-11	ELECT(SOLID)	47uF	20%	6.3V
C508	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
C509	1-124-257-00	ELECT	2.2uF	20%	50V
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C511	1-126-090-11	ELECT	82uF	20%	10V
C512	1-137-306-11	FILM CHIP	0.1uF	5%	16V
C513	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C514	1-131-381-00	TANTALUM	47uF	10%	10V
C515	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C516	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
		< CONNECTOR >			
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P			
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
		< DIODE >			
D501	8-719-820-65	DIODE TLS221			
D502	8-719-984-02	LED BR4371F			
D503	8-719-400-20	DIODE MA152WA			
		< IC >			
IC501	8-759-420-01	IC AN2512S			
		< COIL >			
L501	1-408-976-21	INDUCTOR 33uH			
L502	1-408-785-21	INDUCTOR CHIP 47uH			
⚠L503	1-459-876-41	COIL, FERRITE (HLC)			

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q501	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q502	8-729-216-31	TRANSISTOR	2SA1163-G		
Q503	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q504	8-729-106-68	TRANSISTOR	2SD1615A-GP		
		< RESISTOR >			
R501	1-216-033-00	METAL CHIP	220	5%	1/10W
R502	1-216-041-00	METAL CHIP	470	5%	1/10W
R503	1-216-041-00	METAL CHIP	470	5%	1/10W
R506	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R507	1-216-047-00	METAL CHIP	820	5%	1/10W
R508	1-216-087-11	METAL GLAZE	39K	5%	1/10W
R509	1-216-087-11	METAL GLAZE	39K	5%	1/10W
R510	1-216-001-00	METAL CHIP	10	5%	1/10W
R511	1-216-121-00	METAL CHIP	1M	5%	1/10W
R512	1-216-131-11	METAL CHIP	2.7M	5%	1/10W
R513	1-216-101-00	METAL CHIP	150K	5%	1/10W
R514	1-216-121-00	METAL CHIP	1M	5%	1/10W
R515	1-216-131-11	METAL CHIP	2.7M	5%	1/10W
R516	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R517	1-216-025-00	METAL CHIP	100	5%	1/10W
R518	1-216-308-00	METAL CHIP	4.7	5%	1/10W
R519	1-216-336-11	METAL CHIP	47K	1%	1/10W
R520	1-216-107-00	METAL CHIP	270K	5%	1/10W
R521	1-216-121-00	METAL CHIP	1M	5%	1/10W
R522	1-216-160-00	METAL GLAZE	27	5%	1/8W
R523	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R524	1-216-113-00	METAL CHIP	470K	5%	1/10W
R525	1-216-097-00	METAL CHIP	100K	5%	1/10W
		< VARIABLE RESISTOR >			
RV501	1-238-092-11	RES, ADJ, CERMET 47K			
RV502	1-238-086-11	RES, ADJ, CERMET 470			
RV503	1-238-088-11	RES, ADJ, CERMET 2.2K			
RV504	1-228-762-00	RES, ADJ, METAL GLAZE 1M			
		< TRANSFORMER >			
⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK			
		< THERMISTOR >			
TH501	1-809-350-21	THERMISTOR, NTC (2125)			
		< FLAT CABLE >			
⚠W501	1-540-019-21	SOCKET ASSY, CRT			

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
*	A-7063-162-A	VS-93P BOARD, COMPLETE				(AEP,UK model)
		**************************************				
*	A-7063-275-A	VS-93P BOARD, COMPLETE				
		***********************				
						(E,Australian,Tourist model)
						(Ref. No. 3000 Series)
	1-630-591-11	FP-182 FLEXIBLE BOARD				
	3-943-006-01	CASE (UPPER), SHIELD, RP				
	3-943-007-01	CASE (LOWER), SHIELD, RP				
	3-943-009-01	PLATE, SHIELD, FE				
		< CAPACITOR >				
C001	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C002	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C003	1-162-955-11	CERAMIC CHIP	150PF	5%	50V	
C004	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C005	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C006	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C007	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C008	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C009	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C010	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C011	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C012	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C013	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C014	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C015	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C016	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C017	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C018	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C019	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C020	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C021	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C022	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C023	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C024	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C025	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C026	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C027	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C028	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C029	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C030	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C031	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C032	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C033	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C034	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C035	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C036	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V	
C037	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C038	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C039	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C040	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C041	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C042	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C043	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C044	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C045	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C046	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V	
C047	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C048	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C049	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C050	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C051	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C052	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C053	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C054	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C055	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C056	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C057	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C058	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C059	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C060	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C061	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C062	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C063	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C064	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C065	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C066	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C067	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C068	1-162-949-11	CERAMIC CHIP	47PF	5%	50V	
C069	1-162-948-11	CERAMIC CHIP	39PF	5%	50V	
C070	1-162-953-11	CERAMIC CHIP	100PF	5%	50V	
C071	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C072	1-162-943-11	CERAMIC CHIP	15PF	5%	50V	
C073	1-162-951-11	CERAMIC CHIP	68PF	5%	50V	
C074	1-162-956-11	CERAMIC CHIP	180PF	5%	50V	
C075	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C076	1-162-945-11	CERAMIC CHIP	22PF	5%	50V	
C077	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C078	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C079	1-162-939-11	CERAMIC CHIP	8PF	0.5PF	50V	
C080	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C081	1-162-944-11	CERAMIC CHIP	18PF	5%	50V	
C082	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C083	1-162-995-11	CERAMIC CHIP	0.022uF		50V	
C084	1-162-995-11	CERAMIC CHIP	0.022uF		50V	(AEP, UK model)
C086	1-162-959-11	CERAMIC CHIP	330PF	5%	50V	(AEP, UK model)
C087	1-162-974-11	CERAMIC CHIP	0.01uF		50V	(AEP, UK model)

Ref. No.	Part No.	Description			Remark
C088	1-162-974-11	CERAMIC CHIP	0.01uF		50V (AEP, UK model)
C089	1-164-360-11	CERAMIC CHIP	0.1uF		16V (AEP, UK model)
C091	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C092	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C093	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C121	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C122	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C123	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C124	1-164-346-11	CERAMIC CHIP	1uF		16V
C125	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C126	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C127	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C128	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C129	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C130	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C131	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C132	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C133	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C135	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C136	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C137	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C150	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C151	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C155	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C156	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C159	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C161	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C167	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C170	1-162-568-11	CERAMIC CHIP	0.33uF		25V
C171	1-162-638-11	CERAMIC CHIP	1uF		16V
C172	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C173	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C175	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C176	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C177	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C178	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C179	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C180	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C181	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C182	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C185	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C186	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C187	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C188	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C189	1-164-362-11	CERAMIC CHIP	470PF	5%	50V
C190	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C192	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C193	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C194	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C199	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C203	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C204	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C205	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C206	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C207	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C208	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C209	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C210	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C211	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C212	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C213	1-163-081-00	CERAMIC CHIP	0.22uF		25V
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C215	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C216	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C217	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C218	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C219	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C220	1-126-246-11	ELECT CHIP	220uF	20%	4V
C221	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C222	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C223	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C225	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C226	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C228	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C229	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C230	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C231	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C232	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C233	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C234	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C236	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C237	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C238	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C239	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C240	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C241	1-126-607-11	ELECT CHIP	47uF	20%	4V
C242	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C245	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C246	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C247	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C248	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C249	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C250	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C251	1-162-955-11	CERAMIC CHIP	150PF	5%	50V (AEP, UK model)
C252	1-162-955-11	CERAMIC CHIP	150PF	5%	50V (AEP, UK model)
C255	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description			Remark
C256	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C257	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C259	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C260	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C261	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C262	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C263	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C264	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C265	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C266	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C268	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C270	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C271	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C273	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C276	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C277	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C278	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C279	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C280	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C281	1-135-146-21	TANTALUM CHIP	0.68uF	20%	25V
C282	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C283	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C284	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C285	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C286	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C288	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C291	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C292	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C294	1-162-638-11	CERAMIC CHIP	1uF		16V
C295	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C297	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C298	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C299	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C300	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C301	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C303	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C305	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C306	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C307	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C401	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C402	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C403	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C404	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C405	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C407	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C408	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C411	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C412	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C413	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C415	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C416	1-162-905-11	CERAMIC CHIP	1PF	0.25PF	50V
C417	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C418	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C419	1-164-346-11	CERAMIC CHIP	1uF		16V
C420	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C421	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C422	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C423	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C424	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C426	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C427	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C428	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C429	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C430	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C433	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C434	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C435	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C436	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C437	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C438	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C439	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C440	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C441	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C442	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C443	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C444	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C445	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C446	1-164-346-11	CERAMIC CHIP	1uF		16V
C447	1-162-936-11	CERAMIC CHIP	5PF	0.25PF	50V
C448	1-164-346-11	CERAMIC CHIP	1uF		16V
C449	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C450	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C451	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C452	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C453	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C454	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref.No.	Part No.	Description			Remark
C455	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C456	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C457	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C458	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C459	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C460	1-163-833-00	CERAMIC CHIP	0.068uF		25V
C461	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C462	1-163-833-00	CERAMIC CHIP	0.068uF		25V
C463	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C464	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C465	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C466	1-164-346-11	CERAMIC CHIP	1uF		16V
C467	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C468	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C469	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C470	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C471	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C472	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C473	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C474	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C475	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C476	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C477	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C478	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C479	1-164-360-11	CERAMIC CHIP	0.1uF		16V

< FILTER >

Ref.No.	Part No.	Description
CF151	1-579-371-11	FILTER, CERAMIC

< CONNECTOR >

Ref.No.	Part No.	Description
CN001	1-566-531-11	CONNECTOR, FPC (ZIF) 15P
CN002	1-573-371-21	CONNECTOR, BOARD TO BOARD 14P
CN101	1-566-542-31	CONNECTOR, FPC (NON ZIF) 10P
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P
CN401	1-691-539-11	CONNECTOR, BOARD TO BOARD 30P
CN402	1-691-472-21	CONNECTOR, FFC/FPC 6P
CN403	1-691-519-11	CONNECTOR, BOARD TO BOARD 30P
CN404	1-573-293-21	PIN, CONNECTOR (1.5MM)(SMD) 2P
CN405	1-566-546-11	CONNECTOR, FPC (NON ZIF) 14P
CN406	1-580-056-21	PIN, CONNECTOR 3P
CN407	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P
CN408	1-566-541-11	CONNECTOR, FPC (NON ZIF) 9P
CN502	1-565-662-11	CONNECTOR (PC BOARD) 15P

< DIODE >

Ref.No.	Part No.	Description	Remark
D001	8-719-951-22	IC IMN10	
D121	8-719-941-86	DIODE DAN202U	
D152	8-719-421-71	DIODE MA132WA-TX	
D152	8-719-991-00	DIODE DAP222-TL	
D154	8-719-989-03	DIODE DAN222	
D159	8-719-941-86	DIODE DAN202U	
D160	8-719-941-86	DIODE DAN202U	
D402	8-719-404-46	DIODE MA110	

< FILTER >

Ref.No.	Part No.	Description	Remark
FL121	1-236-188-11	FILTER, BAND PASS	
FL152	1-236-849-21	FILTER, BAND PASS	
FL153	1-236-186-11	FILTER, BAND PASS	
FL154	1-239-055-21	FILTER, LOW PASS (CCD. PAL. Y)	
FL155	1-236-848-21	FILTER, LOW PASS	
FL401	1-406-452-11	COIL, OSC	

< IC >

Ref.No.	Part No.	Description	Remark
IC001	8-752-033-38	IC CXA1202R	
IC002	8-752-033-38	IC CXA1202R	
IC003	8-752-053-21	IC CXA1211M	
IC005	8-759-998-32	IC CXD-2107M (AEP, UK model)	
IC121	8-759-605-61	IC CXA1203N	
IC151	8-752-036-19	IC CXA1207R	
IC152	8-752-036-20	IC CXA1208R	
IC153	8-759-710-29	IC NJM2235M	
IC154	8-752-333-24	IC CXL1506M	
IC155	8-752-053-21	IC CXA1211M	
IC156	8-759-064-36	IC MB88346BPFV-EF	
IC158	8-759-064-36	IC MB88346BPFV-EF	
IC159	8-759-636-33	IC CXA1452-E2	
IC401	8-752-834-39	IC CXP80624-293R	
IC402	8-759-069-29	IC uPD6456GS-618	
IC403	8-759-044-78	IC AK6420F	
IC404	8-759-057-81	IC MPC1727VMER	
IC405	8-759-059-42	IC CXA1481AR	
IC406	8-759-999-02	IC TL1596CDB	
IC407	8-759-057-77	IC MCD004BN	
IC408	8-759-057-74	IC MCD002AR-TLM	
IC409	8-759-823-90	IC LB8110M	

< COIL >

Ref.No.	Part No.	Description	Remark
L001	1-410-381-11	INDUCTOR CHIP 10uH	
L002	1-412-066-21	INDUCTOR CHIP 220uH	
L003	1-412-066-21	INDUCTOR CHIP 220uH	
L004	1-412-066-21	INDUCTOR CHIP 220uH	
L005	1-410-385-11	INDUCTOR CHIP 22uH	
L006	1-410-385-11	INDUCTOR CHIP 22uH	
L007	1-412-058-11	INDUCTOR CHIP 10uH	
L008	1-410-658-31	INDUCTOR CHIP 220uH	

Ref. No.	Part No.	Description	Remark
L009	1-410-380-31	INDUCTOR CHIP 8.2uH	
L010	1-410-655-31	INDUCTOR CHIP 120uH	
L011	1-412-280-31	INDUCTOR 330uH	
L012	1-410-388-21	INDUCTOR CHIP 39uH	
L013	1-410-385-11	INDUCTOR CHIP 22uH	
L014	1-412-058-11	INDUCTOR CHIP 10uH	(AEP, UK model)
L121	1-410-381-11	INDUCTOR CHIP 10uH	
L150	1-412-954-11	INDUCTOR 18uH	
L151	1-410-388-21	INDUCTOR CHIP 39uH	
L152	1-410-385-11	INDUCTOR CHIP 22uH	
L154	1-410-390-11	INDUCTOR CHIP 56uH	
L155	1-410-390-11	INDUCTOR CHIP 56uH	
L158	1-410-393-11	INDUCTOR CHIP 100uH	
L160	1-412-058-11	INDUCTOR CHIP 10uH	
L161	1-410-385-11	INDUCTOR CHIP 22uH	
L162	1-412-280-31	INDUCTOR 330uH	
L163	1-410-167-41	INDUCTOR CHIP 820uH	
L164	1-410-657-21	INDUCTOR CHIP 180uH	
L167	1-410-383-31	INDUCTOR CHIP 15uH	
L168	1-410-379-31	INDUCTOR CHIP 6.8uH	
L169	1-410-392-11	INDUCTOR CHIP 82uH	
L170	1-410-381-11	INDUCTOR CHIP 10uH	
L171	1-410-384-31	INDUCTOR CHIP 18uH	
L174	1-412-058-11	INDUCTOR CHIP 10uH	
L175	1-410-393-11	INDUCTOR CHIP 100uH	
L176	1-410-656-11	INDUCTOR CHIP 150uH	
L177	1-412-058-11	INDUCTOR CHIP 10uH	
L178	1-412-062-11	INDUCTOR CHIP 47uH	
L179	1-410-379-31	INDUCTOR CHIP 6.8uH	
L180	1-410-393-11	INDUCTOR CHIP 100uH	
L181	1-410-393-11	INDUCTOR CHIP 100uH	
L182	1-410-655-31	INDUCTOR CHIP 120uH	
L184	1-410-386-11	INDUCTOR CHIP 27uH	
L185	1-412-058-11	INDUCTOR CHIP 10uH	
L401	1-412-058-11	INDUCTOR CHIP 10uH	
L402	1-412-058-11	INDUCTOR CHIP 10uH	
L403	1-412-064-11	INDUCTOR CHIP 100uH	
L404	1-412-058-11	INDUCTOR CHIP 10uH	

< IC LINK >

⚠PS401	1-576-122-21	RINK, IC	
⚠PS402	1-576-123-21	RINK, IC	

< TRANSISTOR >

Q001	8-729-216-22	TRANSISTOR 2SA1162-G	
Q003	8-729-905-23	TRANSISTOR 2SA1576-R	
Q004	8-729-905-18	TRANSISTOR DTC144EU	
Q005	8-729-905-18	TRANSISTOR DTC144EU	
Q006	8-729-823-86	TRANSISTOR 2SA1745	

Ref. No.	Part No.	Description	Remark
Q007	8-729-823-86	TRANSISTOR 2SA1745	
Q008	8-729-905-23	TRANSISTOR 2SA1576-R	
Q009	8-729-905-23	TRANSISTOR 2SA1576-R	
Q010	8-729-905-12	TRANSISTOR DTA144EU	
Q011	8-729-905-18	TRANSISTOR DTC144EU	
Q012	8-729-905-18	TRANSISTOR DTC144EU	
Q013	8-729-823-86	TRANSISTOR 2SA1745	
Q014	8-729-823-86	TRANSISTOR 2SA1745	
Q015	8-729-905-23	TRANSISTOR 2SA1576-R	
Q016	8-729-905-23	TRANSISTOR 2SA1576-R	
Q017	8-729-905-12	TRANSISTOR DTA144EU	
Q018	8-729-905-18	TRANSISTOR DTC144EU	
Q019	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q020	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q021	8-729-905-23	TRANSISTOR 2SA1576-R	
Q022	8-729-905-23	TRANSISTOR 2SA1576	
Q023	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q024	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q025	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q026	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q027	8-729-905-96	TRANSISTOR DTA114TU	(AEP, UK model)
Q028	8-729-905-96	TRANSISTOR DTA114TU	(AEP, UK model)
Q029	8-729-905-96	TRANSISTOR DTA114TU	
Q030	8-729-905-15	TRANSISTOR DTC144WU	(AEP, UK model)
Q031	8-729-905-18	TRANSISTOR DTC144EU	
Q121	8-729-905-12	TRANSISTOR DTA144EU	
Q123	8-729-905-18	TRANSISTOR DTC144EU	
Q124	8-729-905-12	TRANSISTOR DTA144EU	
Q125	8-729-117-73	TRANSISTOR 2SC4178	
Q126	8-729-120-28	TRANSISTOR 2SC1623	
Q151	8-729-101-07	TRANSISTOR 2SB798-DL	
Q152	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q153	8-729-928-81	TRANSISTOR DTC144EE	
Q154	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q155	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	
Q158	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q160	8-729-928-19	TRANSISTOR 2SA1774R	(AEP, UK model)
Q161	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q162	8-729-928-27	TRANSISTOR DTA144EE	
Q166	8-729-928-19	TRANSISTOR 2SA1774R	
Q168	8-729-928-27	TRANSISTOR DTA144EE	
Q169	8-729-905-18	TRANSISTOR DTC144EU	
Q170	8-729-925-47	TRANSISTOR IMB2	
Q171	8-729-117-73	TRANSISTOR 2SC4178	
Q172	8-729-117-73	TRANSISTOR 2SC4178	
Q175	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q176	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q177	8-729-905-23	TRANSISTOR 2SA1576-R	
Q178	8-729-905-23	TRANSISTOR 2SA1576-R	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
Q180	8-729-422-54	TRANSISTOR XN4215	
Q181	8-729-905-18	TRANSISTOR DTC144EU	(AEP, UK model)
Q182	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q183	8-729-921-58	TRANSISTOR DTA144TU	
Q184	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q185	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q188	8-729-907-26	TRANSISTOR IMX1	
Q189	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q191	8-729-927-XX	TRANSISTOR 2SC4617	
Q192	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q194	8-729-927-XX	TRANSISTOR 2SC4617TL-QR	
Q195	8-729-928-19	TRANSISTOR 2SA1774R	
Q199	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q200	8-729-905-18	TRANSISTOR DTC144EU	
Q201	8-729-920-48	TRANSISTOR IMH2	
Q202	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q203	8-729-905-23	TRANSISTOR 2SA1576-R	
Q204	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q205	8-729-920-48	TRANSISTOR IMH2	
Q207	8-729-905-12	TRANSISTOR DTA144EU	
Q208	8-729-905-18	TRANSISTOR DTC144EU	
Q210	8-729-920-48	TRANSISTOR IMH2	
Q211	8-729-823-16	TRANSISTOR 2SC4555	(AEP, UK model)
Q212	8-729-905-23	TRANSISTOR 2SA1576-R	
Q213	8-729-823-16	TRANSISTOR 2SC4555	(AEP, UK model)
Q214	8-729-920-48	TRANSISTOR IMH2	
Q216	8-729-905-18	TRANSISTOR DTC144EU	(AEP, UK model)
Q219	8-729-905-12	TRANSISTOR DTA144EU	
Q220	8-729-905-18	TRANSISTOR DTC144EU	
Q221	8-729-920-48	TRANSISTOR IMH2	
Q222	8-729-120-28	TRANSISTOR 2SC1623	
Q223	8-729-905-18	TRANSISTOR DTC144EU	
Q224	8-729-120-28	TRANSISTOR 2SC1623	
Q225	8-729-120-28	TRANSISTOR 2SC1623	
Q227	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q228	8-729-920-48	TRANSISTOR IMH2	
Q229	8-729-905-23	TRANSISTOR 2SA1576	
Q230	8-729-120-28	TRANSISTOR 2SC1623	
Q231	8-729-905-23	TRANSISTOR 2SA1576-R	
Q232	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q233	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q234	8-729-905-23	TRANSISTOR 2SA1576-R	
Q235	8-729-928-81	TRANSISTOR DTC144EE	
Q236	8-729-905-09	TRANSISTOR DTA144WU	
Q237	8-729-928-19	TRANSISTOR 2SA1774R	
Q401	8-729-905-12	TRANSISTOR DTA144EU	
Q402	8-729-905-18	TRANSISTOR DTC144EU	
Q403	8-729-907-00	TRANSISTOR DTC114EU	
Q404	8-729-905-23	TRANSISTOR 2SA1576-R	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R001	1-216-801-11	METAL CHIP 22 5% 1/16W	
R002	1-216-818-11	METAL CHIP 560 5% 1/16W	
R004	1-216-815-11	METAL CHIP 330 5% 1/16W	
R005	1-216-817-11	METAL CHIP 470 5% 1/16W	
R006	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R007	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R008	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R009	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R010	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R011	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R012	1-216-834-11	METAL CHIP 12K 5% 1/16W	(AEP, UK model)
R012	1-216-838-11	METAL CHIP 27K 5% 1/16W	(E, Australian, Tourist model)
R013	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R014	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R015	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R016	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R017	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R018	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R019	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R020	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R021	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R022	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R023	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R024	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R025	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R026	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R027	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R028	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R029	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R030	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R031	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R032	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R033	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
R034	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
R035	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R036	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R037	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R038	1-216-834-11	METAL CHIP 12K 5% 1/16W	(AEP, UK model)
R038	1-216-838-11	METAL CHIP 27K 5% 1/16W	(E, Australian, Tourist model)
R039	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R040	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R041	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R042	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R043	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R044	1-216-833-11	METAL CHIP 10K 5% 16W	

Ref. No.	Part No.	Description				Remark
R045	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R046	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R047	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R048	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R049	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R050	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R051	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R052	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R054	1-216-817-11	METAL CHIP	470	5%	1/16W	
R055	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R056	1-216-813-11	METAL CHIP	220	5%	1/16W	
R057	1-216-818-11	METAL CHIP	560	5%	1/16W	
R058	1-216-818-11	METAL CHIP	560	5%	1/16W	
R059	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R060	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R061	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R062	1-216-818-11	METAL CHIP	560	5%	1/16W	
R063	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R064	1-216-817-11	METAL CHIP	470	5%	1/16W	
R065	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R066	1-216-809-11	METAL CHIP	100	5%	1/16W	
R067	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R068	1-216-816-11	METAL CHIP	390	5%	1/16W	
R069	1-216-819-11	METAL CHIP	680	5%	1/16W	
R070	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R071	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R072	1-216-820-11	METAL CHIP	820	5%	1/16W	
R073	1-216-814-11	METAL CHIP	270	5%	1/16W	
R074	1-216-816-11	METAL CHIP	390	5%	1/16W	
R075	1-216-817-11	METAL CHIP	470	5%	1/16W	
R076	1-216-864-11	METAL CHIP	0	5%	1/16W	
R077	1-216-809-11	METAL CHIP	100	5%	1/16W	
R078	1-216-820-11	METAL CHIP	820	5%	1/16W	
R079	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R080	1-216-819-11	METAL CHIP	680	5%	1/16W	
R082	1-216-819-11	METAL CHIP	680	5%	1/16W	
R083	1-216-819-11	METAL CHIP	680	5%	1/16W	
R086	1-216-813-11	METAL CHIP	220	5%	1/16W	
R087	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R088	1-216-814-11	METAL CHIP	270	5%	1/16W	
R089	1-216-816-11	METAL CHIP	390	5%	1/16W	
R090	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R091	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R092	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R093	1-216-864-11	METAL CHIP	0	5%	1/16W	(AEP, UK model)
R095	1-216-833-11	METAL CHIP	10K	5%	1/16W	(AEP, UK model)
R096	1-216-864-11	METAL CHIP	0	5%	1/16W	(E, Australian, Tourist model)
R097	1-216-864-11	METAL CHIP	0	5%	1/16W	
R099	1-216-864-11	METAL CHIP	0	5%	1/16W	
R100	1-216-864-11	METAL CHIP	0	5%	1/16W	
R113	1-809-352-11	THERMISTOR, NTC				
R115	1-216-864-11	METAL CHIP	0	5%	1/16W	
R116	1-216-864-11	METAL CHIP	0	5%	1/16W	
R119	1-216-864-11	METAL CHIP	0	5%	1/16W	
R122	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R123	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R124	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R125	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R126	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R127	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R129	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R130	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R131	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R132	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R133	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R134	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R135	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R136	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R137	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R138	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R139	1-216-817-11	METAL CHIP	470	5%	1/16W	
R140	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R141	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R142	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R143	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R144	1-216-817-11	METAL CHIP	470	5%	1/16W	
R145	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R146	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R147	1-216-864-11	METAL CHIP	0	5%	1/16W	
R148	1-216-864-11	METAL CHIP	0	5%	1/16W	
R151	1-216-296-00	METAL CHIP	0	5%	1/8W	
R152	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R153	1-216-304-11	METAL CHIP	3.3	5%	1/10W	
R154	1-216-820-11	METAL CHIP	820	5%	1/16W	
R155	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R156	1-216-296-00	METAL CHIP	0	5%	1/8W	
R157	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R158	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R159	1-216-814-11	METAL CHIP	270	5%	1/16W	
R160	1-216-817-11	METAL CHIP	470	5%	1/16W	
R161	1-216-809-11	METAL CHIP	100	5%	1/16W	
R164	1-216-811-11	METAL CHIP	150	5%	1/16W	
R167	1-216-820-11	METAL CHIP	820	5%	1/16W	
R168	1-216-820-11	METAL CHIP	820	5%	1/16W	
R170	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R171	1-216-864-11	METAL CHIP	0	5%	1/16W	
R174	1-216-841-11	METAL CHIP	47K	5%	1/16W	(AEP, UK model)

Ref.No.	Part No.	Description			Remark
R175	1-216-811-11	METAL CHIP	150	5%	1/16W
R176	1-216-807-11	METAL CHIP	68	5%	1/16W
R177	1-216-819-11	METAL CHIP	680	5%	1/16W
R178	1-216-817-11	METAL CHIP	470	5%	1/16W
R179	1-216-820-11	METAL CHIP	820	5%	1/16W
R189	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R190	1-216-837-11	METAL CHIP	22K	5%	1/16W
R191	1-216-864-11	METAL CHIP	0	5%	1/16W
R192	1-216-833-11	METAL CHIP	10K	5%	1/16W
R193	1-216-841-11	METAL CHIP	47K	5%	1/16W
R196	1-216-815-11	METAL CHIP	330	5%	1/16W
R197	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R198	1-216-817-11	METAL CHIP	470	5%	1/16W
R200	1-216-821-11	METAL CHIP	1K	5%	1/16W
R201	1-216-815-11	METAL CHIP	330	5%	1/16W
R202	1-216-840-11	METAL CHIP	39K	5%	1/16W
R203	1-216-837-11	METAL CHIP	22K	5%	1/16W
R204	1-216-821-11	METAL CHIP	1K	5%	1/16W
R205	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R206	1-216-813-11	METAL CHIP	220	5%	1/16W
R208	1-216-864-11	METAL CHIP	0	5%	1/16W
R209	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R210	1-216-807-11	METAL CHIP	68	5%	1/16W (E, Australian, Tourist model)
R210	1-216-821-11	METAL CHIP	1K	5%	1/16W (AEP, UK model)
R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R213	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (E, Australian, Tourist model)
R213	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (AEP, UK model)
R216	1-216-837-11	METAL CHIP	22K	5%	1/16W
R217	1-216-837-11	METAL CHIP	22K	5%	1/16W
R218	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R219	1-216-821-11	METAL CHIP	1K	5%	1/16W
R220	1-216-811-11	METAL CHIP	150	5%	1/16W
R221	1-216-835-11	METAL CHIP	15K	5%	1/16W
R222	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R223	1-216-835-11	METAL CHIP	15K	5%	1/16W
R225	1-216-821-11	METAL CHIP	1K	5%	1/16W
R226	1-216-864-11	METAL CHIP	0	5%	1/16W
R228	1-216-818-11	METAL CHIP	560	5%	1/16W
R229	1-216-811-11	METAL CHIP	150	5%	1/16W
R230	1-216-819-11	METAL CHIP	680	5%	1/16W
R236	1-216-837-11	METAL CHIP	22K	5%	1/16W
R237	1-216-841-11	METAL CHIP	47K	5%	1/16W
R238	1-216-818-11	METAL CHIP	560	5%	1/16W
R239	1-216-864-11	METAL CHIP	0	5%	1/16W
R240	1-216-837-11	METAL CHIP	22K	5%	1/16W
R241	1-216-841-11	METAL CHIP	47K	5%	1/16W
R242	1-216-818-11	METAL CHIP	560	5%	1/16W
R243	1-216-817-11	METAL CHIP	470	5%	1/16W
R245	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R246	1-216-820-11	METAL CHIP	820	5%	1/16W
R247	1-216-296-00	METAL CHIP	0	5%	1/8W
R248	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R250	1-216-810-11	METAL CHIP	120	5%	1/16W
R251	1-216-806-11	METAL GLAZE	56	5%	1/16W
R252	1-216-864-11	METAL CHIP	0	5%	1/16W
R253	1-216-816-11	METAL CHIP	390	5%	1/16W
R254	1-216-817-11	METAL CHIP	470	5%	1/16W
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W
R256	1-216-864-11	METAL CHIP	0	5%	1/16W
R257	1-216-818-11	METAL CHIP	560	5%	1/16W
R258	1-216-821-11	METAL CHIP	1K	5%	1/16W
R259	1-216-816-11	METAL CHIP	390	5%	1/16W
R260	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R270	1-216-295-00	METAL CHIP	0	5%	1/10W
R271	1-216-841-11	METAL CHIP	47K	5%	1/16W
R272	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R273	1-216-841-11	METAL CHIP	47K	5%	1/16W
R274	1-216-841-11	METAL CHIP	47K	5%	1/16W
R275	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R276	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R277	1-216-818-11	METAL CHIP	560	5%	1/16W
R278	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R279	1-216-818-11	METAL CHIP	560	5%	1/16W
R280	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R281	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R282	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R283	1-216-821-11	METAL CHIP	1K	5%	1/16W
R285	1-216-833-11	METAL CHIP	10K	5%	1/16W
R286	1-216-833-11	METAL CHIP	10K	5%	1/16W
R287	1-216-833-11	METAL CHIP	10K	5%	1/16W
R288	1-216-804-11	METAL CHIP	39	5%	1/16W
R289	1-216-804-11	METAL CHIP	39	5%	1/16W
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W
R291	1-216-820-11	METAL CHIP	820	5%	1/16W
R292	1-216-804-11	METAL CHIP	39	5%	1/16W
R293	1-216-804-11	METAL CHIP	39	5%	1/16W
R294	1-216-845-11	METAL CHIP	100K	5%	1/16W
R295	1-216-853-11	METAL CHIP	470K	5%	1/16W
R296	1-216-855-11	METAL CHIP	680K	5%	1/16W
R297	1-216-820-11	METAL CHIP	820	5%	1/16W
R298	1-216-820-11	METAL CHIP	820	5%	1/16W
R299	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R300	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R302	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R303	1-216-846-11	METAL CHIP	120K	5%	1/16W

Ref. No.	Part No.	Description				Remark
R304	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R305	1-216-818-11	METAL CHIP	560	5%	1/16W	
R306	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R308	1-216-819-11	METAL CHIP	680	5%	1/16W	
R309	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R310	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R311	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R312	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R314	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R315	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R316	1-216-817-11	METAL CHIP	470	5%	1/16W	
R317	1-216-816-11	METAL CHIP	390	5%	1/16W	(AEP, UK model)
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R319	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R321	1-216-864-11	METAL CHIP	0	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R324	1-216-817-11	METAL CHIP	470	5%	1/16W	
R325	1-216-864-11	METAL CHIP	0	5%	1/16W	(E, Australian, Tourist model)
R326	1-216-841-11	METAL CHIP	47K	5%	1/16W	(AEP, UK model)
R327	1-216-841-11	METAL CHIP	47K	5%	1/16W	(AEP, UK model)
R329	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R331	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R333	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R334	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R335	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R337	1-216-864-11	METAL CHIP	0	5%	1/16W	
R339	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R341	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R342	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R343	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R344	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R345	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R346	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R347	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R348	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R349	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R350	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R352	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R353	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R354	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R355	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R356	1-216-817-11	METAL CHIP	470	5%	1/16W	
R357	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R358	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R359	1-216-296-00	METAL CHIP	0	5%	1/8W	
R360	1-216-296-00	METAL CHIP	0	5%	1/8W	
R361	1-216-864-11	METAL CHIP	0	5%	1/16W	
R362	1-216-810-11	METAL CHIP	120	5%	1/16W	
R364	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R365	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R366	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R367	1-216-296-00	METAL CHIP	0	5%	1/8W	
R368	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R371	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R373	1-216-817-11	METAL CHIP	470	5%	1/16W	
R374	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R375	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R376	1-216-817-11	METAL CHIP	470	5%	1/16W	
R377	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R378	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R379	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R380	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R381	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R382	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R383	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R384	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R385	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R386	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R388	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R389	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R390	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R391	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R392	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R393	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R394	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R397	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R398	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R399	1-216-833-11	METAL CHIP	10K	5%	1/16W	(AEP, UK model)
R401	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R402	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R403	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R404	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R405	1-216-864-11	METAL CHIP	0	5%	1/16W	
R406	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R407	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R408	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R409	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R410	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R411	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R413	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R414	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R415	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R417	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R418	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description			Remark
R419	1-216-833-11	METAL CHIP	10K	5%	1/16W
R420	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R421	1-216-841-11	METAL CHIP	47K	5%	1/16W
R422	1-216-856-11	METAL CHIP	820K	5%	1/16W
R423	1-216-835-11	METAL CHIP	15K	5%	1/16W
R424	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R425	1-216-837-11	METAL CHIP	22K	5%	1/16W
R426	1-216-841-11	METAL CHIP	47K	5%	1/16W
R428	1-216-849-11	METAL CHIP	220K	5%	1/16W
R429	1-216-856-11	METAL CHIP	820K	5%	1/16W
R430	1-216-834-11	METAL CHIP	12K	5%	1/16W
R435	1-216-842-11	METAL CHIP	56K	5%	1/16W
R436	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R437	1-216-821-11	METAL CHIP	1K	5%	1/16W
R438	1-216-864-11	METAL CHIP	0	5%	1/16W
R440	1-216-815-11	METAL CHIP	330	5%	1/16W
R441	1-216-841-11	METAL CHIP	47K	5%	1/16W
R442	1-216-841-11	METAL CHIP	47K	5%	1/16W
R443	1-216-845-11	METAL CHIP	100K	5%	1/16W
R444	1-216-834-11	METAL CHIP	12K	5%	1/16W
R445	1-216-837-11	METAL CHIP	22K	5%	1/16W
R447	1-216-864-11	METAL CHIP	0	5%	1/16W
R448	1-216-821-11	METAL CHIP	1K	5%	1/16W
R449	1-216-833-11	METAL CHIP	10K	5%	1/16W
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W
R451	1-216-833-11	METAL CHIP	10K	5%	1/16W
R452	1-216-839-11	METAL CHIP	33K	5%	1/16W
R453	1-216-857-11	METAL CHIP	1M	5%	1/16W
R454	1-216-838-11	METAL CHIP	27K	5%	1/16W
R455	1-216-839-11	METAL CHIP	33K	5%	1/16W
R456	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W
R458	1-216-853-11	METAL CHIP	470K	5%	1/16W
R459	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R460	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R461	1-216-852-11	METAL CHIP	390K	5%	1/16W
R462	1-216-839-11	METAL CHIP	33K	5%	1/16W
R463	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R464	1-216-809-11	METAL CHIP	100	5%	1/16W
R465	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R466	1-216-849-11	METAL CHIP	220K	5%	1/16W
R468	1-216-809-11	METAL CHIP	100	5%	1/16W
R470	1-216-840-11	METAL CHIP	39K	5%	1/16W
R471	1-216-833-11	METAL CHIP	10K	5%	1/16W
R472	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R473	1-217-671-11	METAL CHIP	1	5%	1/10W
R474	1-217-671-11	METAL CHIP	1	5%	1/10W
R475	1-217-671-11	METAL CHIP	1	5%	1/10W

Ref. No.	Part No.	Description			Remark
R476	1-217-671-11	METAL CHIP	1	5%	1/10W
R477	1-216-019-00	METAL CHIP	56	5%	1/10W
R478	1-216-841-11	METAL CHIP	47K	5%	1/16W
R479	1-216-833-11	METAL CHIP	10K	5%	1/16W
R480	1-216-844-11	METAL CHIP	82K	5%	1/16W
		< NETWORK RESISTOR >			
RB401	1-236-444-11	NETWORK, RES 470K			
RB402	1-236-424-11	NETWORK, RES 10K			
RB403	1-236-424-11	NETWORK, RES 10K			
RB404	1-236-424-11	NETWORK, RES 10K			
RB405	1-236-432-11	NETWORK, RES 47K			
RB406	1-236-412-11	NETWORK, RES 1.0K			
RB407	1-236-432-11	NETWORK, RES 47K			
RB408	1-236-412-11	NETWORK, RES 1.0K			
RB409	1-236-440-11	NETWORK, RES 220K			
RB410	1-236-408-11	NETWORK, RES 470			
RB411	1-236-448-11	NETWORK, RES 1.0M			
RB412	1-236-444-11	NETWORK, RES 470K			
RB413	1-236-424-11	NETWORK, RES 10K			
RB414	1-236-424-11	NETWORK, RES 10K			
RB415	1-236-424-11	NETWORK, RES 10K			
RB416	1-236-416-11	NETWORK, RES 2.2K			
RB417	1-236-432-11	NETWORK, RES 47K			
		< VARIABLE RESISTOR >			
RV151	1-238-087-11	RES, ADJ, CERMET 1K			
RV151	1-238-853-11	RES, ADJ, CERMET 1K			
		< FLEXIBLE BOARD >			
W402	1-644-285-11	FP-572 FLEXIBLE BOARD			
		< VIBRATOR >			
X151	1-577-117-21	OSCILLATOR, CRYSTAL (4.433619MHz)			
X401	1-579-368-31	VIBRATOR, CRYSTAL (11.71875MHz)			

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
12	1-537-369-11	TERMINAL BOARD (JK-3100)	(E, Australian, Tourist model)
12	1-537-369-21	TERMINAL BOARD (JK-3100)	(AEP, UK model)
15	1-537-368-21	TERMINAL BOARD (BATTERY)	
25	1-692-084-11	SWITCH ASSY	
59	1-466-711-11	SWITCH BLOCK, CONTROL (CF3200)	(E, Australian, Tourist model)
* 59	1-466-711-21	SWITCH BLOCK, CONTROL (CF3200)	(AEP, UK model)
71	1-466-710-11	SWITCH BLOCK, CONTROL (ZM3200)	(AEP, UK model)
71	1-466-710-21	SWITCH BLOCK, CONTROL (ZM3200)	(E, Australian, Tourist model)
123	1-547-548-11	LENS, ZOOM (VCL-6210WC)	
128	1-547-558-21	FILTER BLOCK, OPTICAL	
IC875	8-752-607-39	IC ICX045BKA-2 (CCD IMAGER)	
M901	A-7048-214-A	DRUM BLOCK ASSY (DGH-37A-R)	(E, Australian, Tourist model)
M901	A-7048-534-A	DRUM BLOCK ASSY (DGH-80A-R)	(AEP, UK model)
M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)	
M903	1-541-607-21	MOTOR, DC (LA12G-344VA) (LOADING)	
⚠PS901	1-532-841-41	LINK, IC	
⚠PS902	1-532-841-41	LINK, IC	
⚠PS903	1-532-841-41	LINK, IC	
⚠V901	1-452-565-11	CRT ASSY (M01KTA80WB)	

****

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	A-6767-706-A	RFU ADAPTOR (RFU-89EA)	(E, Tourist model)
	A-6767-707-A	RFU ADAPTOR (RFU-89EA)	(UK model)
	A-6768-254-A	RFU ADAPTOR (RFU-90E)	(AEP model)
	A-6768-255-A	RFU ADAPTOR (RFU-90AS)	(Australian model)
	1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE)	(UK, E, Tourist model)
	1-573-291-11	CONNECTOR, CONVERSION	(AEP, UK model)
	1-575-334-11	CORD, CONNECTION	
	1-693-137-31	REMOTE COMMANDER (CAM CORDER) (RMT-701)	
	3-701-625-00	BAG, POLYETHYLENE	
	3-704-281-01	BAG, PROTECTION (STANDARD)	
	3-708-412-01	LID, REMOTE COMMANDER	
	3-712-673-01	SCREWDRIVER	(UK, E, Tourist model)
	3-738-517-01	BELT (S), SHOULDER	
	3-754-800-41	MANUAL, INSTRUCTION (ENGLISH)	(AEP:BLACK, UK model)
	3-754-800-51	MANUAL, INSTRUCTION	(AEP model) (FRENCH, GERMAN, SPANISH)
	3-754-800-61	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN)	(AEP:BLACK, Australian model)
	3-754-800-71	MANUAL, INSTRUCTION (PORTUGUESE)	(AEP model)
	3-754-800-81	MANUAL, INSTRUCTION	(DANISH, FINNISH) (AEP model)
	3-754-940-61	MANUAL, INSTRUCTION (ENGLISH)	(E, Tourist model)
	3-754-940-71	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH)	(E, Tourist model)
	3-754-940-81	MANUAL, INSTRUCTION (ARABIC)	(E, Tourist model)
	3-754-940-91	MANUAL, INSTRUCTION (CHINESE)	(E model)
*	3-943-154-11	HOLDER (B), REMOTE CONTROL	
*	3-947-958-51	INDIVIDUAL CARTON	(AEP:BLUE model)
*	3-948-281-11	INDIVIDUAL CARTON	(EXCEPT AEP:BLUE model)
*	3-948-282-02	CUSHION, ACC	
*	3-948-283-01	CUSHION (LOWER)	

**	AC-V35	AC POWER ADAPTOR
***	NP-55	BATTERY PACK

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORIES.

****

****
HARDWARE LIST
****

#1	7-624-102-04	STOP RING 1.5, TYPE -E

****

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 218.

7-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

7-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)[Note 1]	J-6082-053-B	
J-6	Extension cord (10P, 1 mm)	J-6082-064-A	For extension of JK-3100 board
J-7	Extension cord (30P, 0.8 mm)	J-6082-135-A	For extension of LC-40P board (For the video and the camera section adjustment)
			For extension of AU-135P board (During the repair of AU-135 board)
J-8	Extension cord (16P, 0.8 mm)	J-6082-136-A	For the extension of the lens block (During the repair of the camera section)
J-9	Relay board (21P, 0.5 mm)[Note 2]	J-6082-176-A	For the extension of the lens block (During the repair of the camera section)
J-10	Measuring pin for camera section	J-6082-139-A	For the camera section adjustment
J-11	Measuring pin for video section	J-6082-140-A	For the video section adjustment
J-12	Siemens star	J-6080-875-A	For flange back check
J-13	Extension cord (20P, 0.5 mm)[Note 2]	J-6082-138-A	For extension between the lens block (FPC) and VC-112P board (CN851) (During the repair of the camera section)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-136-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-136-A) for extensions between the lens block (FPC) and VC-112P board (CN851).

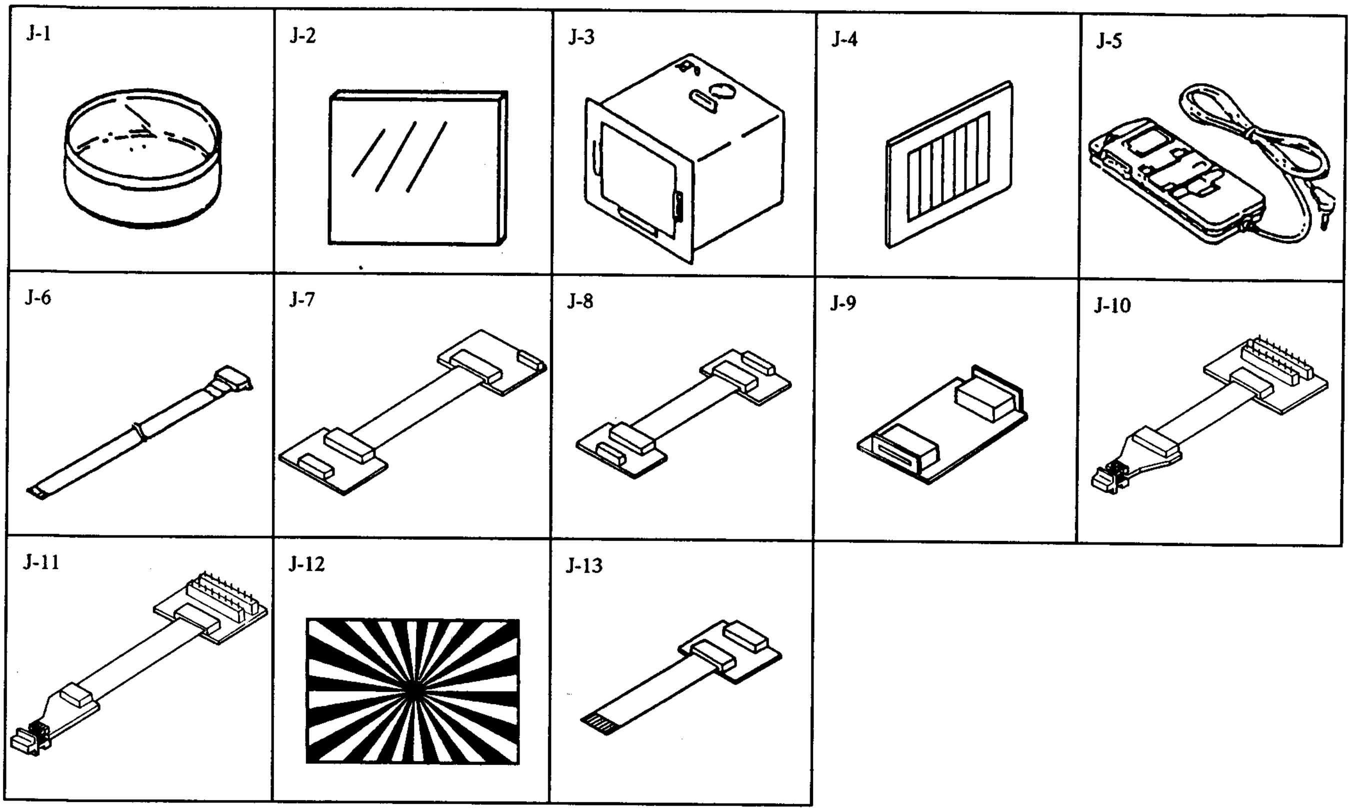

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13

Fig. 7-1.

7-1-2. Preparations

Note: For further details on how to remove the cabinet and each board, refer to "1. Disassembly".

1) Connect the equipments for adjustment as shown in Fig. 7-3.
2) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. If the EVF is not required, remove the VS-93P board CN102.

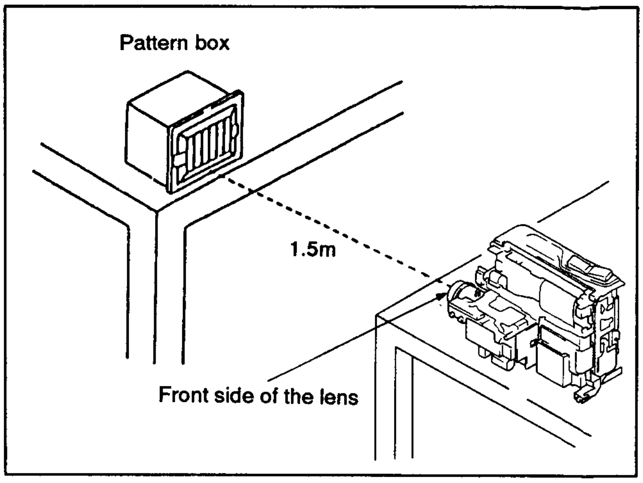
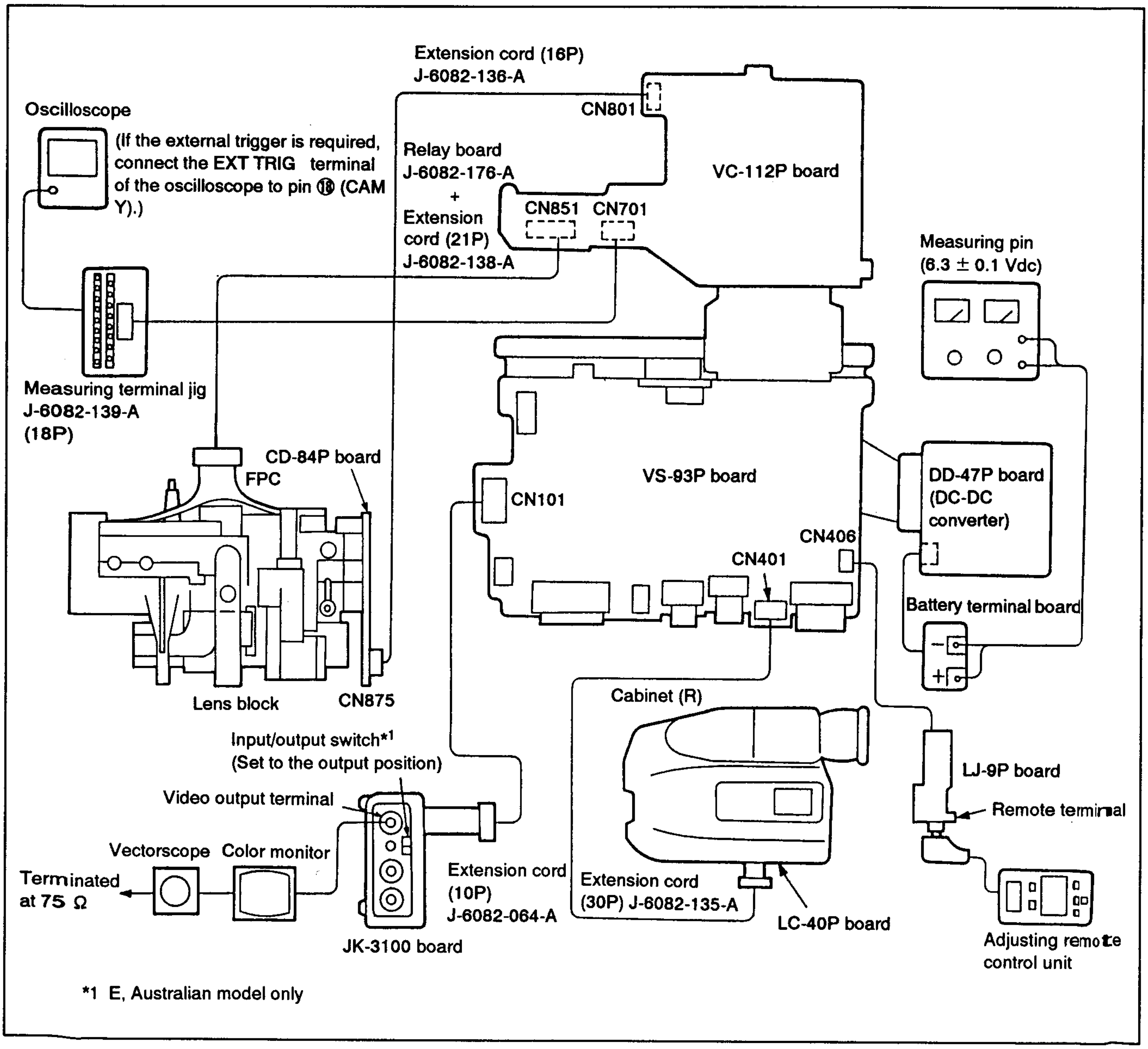

Pattern box
1.5m
Front side of the lens

Fig. 7-2.


Extension cord (16P)
J-6082-136-A
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to pin ⑱ (CAM Y).)
CN801
Relay board
J-6082-176-A
+
Extension cord (21P)
J-6082-138-A
CN851
CN701
VC-112P board
Measuring pin
(6.3 ± 0.1 Vdc)
Measuring terminal jig
J-6082-139-A
(18P)
CD-84P board
FPC
VS-93P board
CN101
CN406
CN401
DD-47P board
(DC-DC converter)
Battery terminal board
Lens block
CN875
Cabinet (R)
Input/output switch*1
(Set to the output position)
Video output terminal
LJ-9P board
Remote terminal
Vectorscope
Color monitor
Terminated at 75 Ω
Extension cord
(10P)
J-6082-064-A
Extension cord
(30P) J-6082-135-A
LC-40P board
JK-3100 board
Adjusting remote control unit

*1 E, Australian model only

Fig. 7-3.

7-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/VTR (or player) power switch (CF-3200 board S1) ··········Camera
2. Standby switch (CF-3200 board S18)··················Standby
3. Input/output switchover switch (JK-3100 board S921) ··························Output (Except for AEP, UK model)
4. LENS OPEN switch·······································OPEN
5. AUTO LOCK switch (CF-3200 board S19)··············· OFF
6. FOCUS button (CF-3200 board S22)················MANUAL
7. EXPOSURE button (CF-3200 board S25)···············AUTO
8. PROGRAM AE button (CF-3200 board S20)······NORMAL

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the display frame as shown in Fig. 7-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

Color bar chart standard picture frame

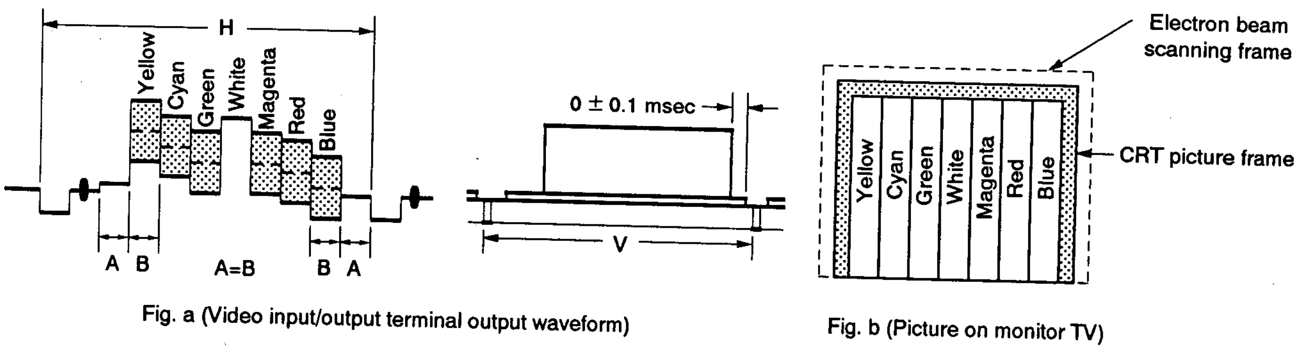


Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-5.

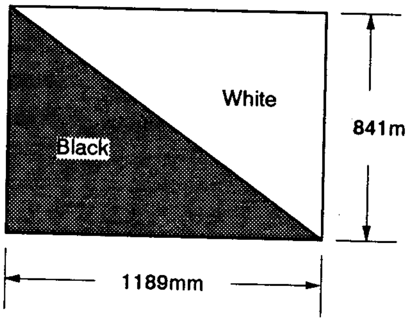


Fig. 7-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

7-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant using the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-112P board IC702). These processes are carried out by the camera micro processor (VC-112P board IC709). This micro processor reads the data written in the non-volatile memory (VC-112P board IC712), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (LJ-9P board J971).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 7-6.

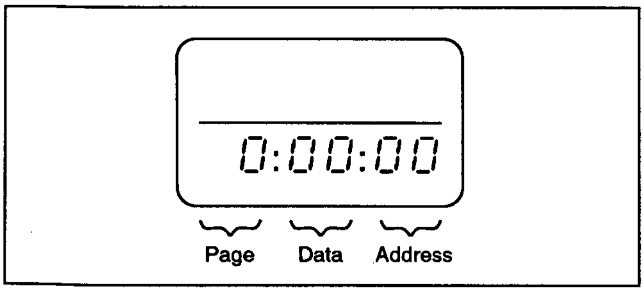


Fig. 7-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Display on LCD	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - Changing the address
     The address will increase when the FF (►►) button is pressed, and decrease when the REW (◄◄) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data will increase when the PLAY (►) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. This releases the write protect of page F, and the camera section (F page) can be adjusted.
   (To adjust the titler system (D page), adjust the data of page: 1, address: 00 to 01, and release the protect of page D.)
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (other than page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

7-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values after performing "Page F Data Initialization" and "Page F Data Modification". They are different from the value after performing all the adjustments.

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	ID	Set ID	00	26
01	FADER LEVEL	AE REF level modification during fader	E0	E0
02	FADER ENDTIM	The setting of the AE REF modulation time during fader	10	10
03	SI OFFSET	Carrier balance adjustment	35	
04	VSUB	CCD imager V SUB adjustment [IC702 ③]	80	
05	VPGH	CCD imager VRG adjustment [IC702 ④]	80	
06	VREF Y	Camera core Y D/A standard voltage, SYNC level adjustment [IC702 ⑤]	7B	
07	VREF C	Camera core CHROMA D/A standard voltage, BURST level adjustment [IC702 ⑥]	99	
08	HALL GAIN	Hole amplifier gain adjustment [IC702 ⑦] } HALL adjustment	47	
09	HALL OFFSET	Hole amplifier offset adjustment [IC702 ⑧]	71	
0A	E LOWLIGHT START	Low luminance intensity REF level modulation start setting	20	20
0B	REF 2V	2V standard voltage for hole element [IC702 ⑫]	68	68
0C	AD REF	Black level setting during A/D conversion, A/D off set adjustment [IC702 ⑬]	72	
0D	CORE DETH	CCD correction control	04	04
0E	CORE VTR DELAY	1HDL longitudinal setting during VTR playback	16	16
0F	CORE APCN4	Horizontal aperture setting	A5	A5
10	CORE APCN5	Vertical aperture setting	3D	3D
11	CORE EFECT	Special effect control	A8	A8
12	CORE MATR	BLUE matrix constant	27	27
13	CORE MATB	RED matrix constant	6C	6C
14	CORE BURST LEVEL	Burst flag level setting, color modulation ON/OFF Data: Adjustment modeAdjustment 38: Normal level 2E: Color modulation stopped	38	38
15	CORE CHROMA DLY	Y/C delay adjustment	01	01
16	CORE Y SETUP	Set up level setting	06	06
17	CORE VHAPCN	Slice and level setting of the aperture signal	15	15
18	CORE B-Y GAIN	B–Y GAIN } Color reproduction adjustments	13	
19	CORE R-Y GAIN	R–Y GAIN	11	
1A	CORE R-Y HUE	R–Y HUE	FF	
1B	CORE B-Y HUE	B–Y HUE	FD	
1C	CS/APCCUT	Low luminance intensity aperture and chroma suppress level	22	22

Table 7-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	**Memo column**
1D	NEXT LINE DEFECT BIT	CCD correction pattern } CCD imager correction data write	00	
1E	CCD DEFECT0	CCD correction data	00	
1F	CCD DEFECT1	CCD correction data	00	
20	CCD DEFECT2	CCD correction data	00	
21	CCD DEFECT3	CCD correction data	00	
22	CCD DEFECT4	CCD correction data	00	
23	CCD DEFECT5	CCD correction data	00	
24	CCD DEFECT6	CCD correction data	00	
25	CCD DEFECT7	CCD correction data	00	
26	CCD DEFECT8	CCD correction data	00	
27	CCD DEFECT9	CCD correction data	00	
28	CCD DEFECT10	CCD correction data	00	
29	CCD DEFECT11	CCD correction data	00	
2A	CCD DEFECT12	CCD correction data	00	
2B	CCD DEFECT13	CCD correction data	00	
2C	CCD DEFECT14	CCD correction data	00	
2D	RREF L	3200k Red standard data LSB } Auto white balance preset adjustment	72	
2E	RREF H	3200k Red standard data MSB	5F	
2F	GREF L	3200k Green standard data LSB	D4	
30	GREF H	3200k Green standard data MSB	63	
31	BREF L	3200k Blue standard data LSB	3B	
32	BREF H	3200k Blue standard data MSB	2C	
33	RCONTREF	3200k RCONT adjustment value } Pre-white balance adjustment	42	
34	BCONTREF	3200k BCONT adjustment value	4A	
35	AWB NOWM R	Red regular correction coefficient } Auto white balance adjustment	7E	
36	AWB NORM B	Blue regular correction coefficient	96	
37	AWB SHUT IN	Indoor determination shutter data	A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data	A0	A0
39	AWB IRIS IN	Indoor determination hole data } IRIS IN/OUT adjustment	79	
3A	AWB IRIS OUT	Outdoor determination hole data	7F	
3B	AWB G LEVEL	High luminance section green integral level	02	02
3C	AWB G WIDTH	High luminance section green integral level range	03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient } Linear matrix adjustment	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient	00	
3F	AWB SELECT	AWB mode selection	00	00
40	AWB DIFF	Standard difference from the outdoor fixed value	0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient	48	48
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient	78	78
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient	60	60
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient	40	40
45	AWB TOP SLP R	AWB incoming frame top R coefficient	66	66
46	AWB TOP SLP B	AWB incoming frame top B coefficient	18	18

Table 7-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>C2</td><td>C2</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>94</td><td>94</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>AD</td><td>AD</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>96</td><td>96</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>78</td><td>78</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>60</td><td>60</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>6C</td><td>6C</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>5C</td><td>5C</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6E</td><td>6E</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>1B</td><td>1B</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5B</td><td>5B</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>39</td><td>39</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>01</td><td>High speed tracking mode</td></tr><tr><td>0C</td><td>Normal</td></tr></table></td><td>0C</td><td>0C</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode<table><tr><th>Data</th><th>Adjustment mode</th></tr><tr><td>00</td><td>Normal</td></tr><tr><td>D0</td><td>AWB adjustment mode</td></tr><tr><td>F1</td><td>All area tracking mode</td></tr></table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>18</td><td>18</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side off set</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
<tr><td>68</td><td>AE FUNCTION</td><td>SW for turning each AE function ON and OFF</td><td>02</td><td>02</td></tr>
</table>

Table 7-2 (3).

Address	**Name**	**Function** **[ ] Indicate the adjustment voltage output terminal**	**Adjustment data**	
			Initial value	**Memo column**
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response DOWN side	28	28
6B	JITEISU UP	Constant during loop response UP side	0D	0D
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYKOU JITEISU	Constant during auto back light response	08	08
76	SUBN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	90	90
78	FUZZY RULE2	Correction amount 2 for auto back light	C0	C0
79	FUZZY RULE3	Correction amount 3 for auto back light	B0	B0
7A	FUZZY RULE4	Correction amount 4 for auto back light	A0	A0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	80	80
7D	FUZZY RULE7	Correction amount 7 for auto back light	A0	A0
7E	FUZZY RULE8	Correction amount 8 for auto back light	98	98
7F	FUZZY RULE9	Correction amount 9 for auto back light	90	90
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Iris limit value (lower)	42	42
82	IRIS MIN H	Iris limit value (upper)	02	02
83	DELTA SHUT GAIN	Shutter smoothing value setting	04	04
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower) Flange back adjustment	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE SIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	90	
8B	STEP ZERO SPAN	Frange back value 2	A0	
8C	ZOOM SPD FAST	Zoom speed (fast)	73	73
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	6A	6A
8E	ZS INIT SLOW	Zoom speed initial value (slow)	6A	6A
8F	ZS INIT FAST	Zoom speed initial value (fast)	6A	6A
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11
92	ZS L	Zoom servo coefficient L	04	04

Table 7-2 (4).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>93</td><td>ZP HYS</td><td>Zoom potential hysteresis</td><td>03</td><td>03</td></tr>
<tr><td>94</td><td>ZOOM SPD SLOW</td><td>Zoom speed (slow)</td><td>29</td><td>29</td></tr>
<tr><td>95</td><td>AF MD2THL</td><td>MODE2 THR</td><td>20</td><td>20</td></tr>
<tr><td>96</td><td>MAXCHG THR</td><td>MAX value renewal THR</td><td>1A</td><td>1A</td></tr>
<tr><td>97</td><td>ERR THL</td><td>Wobbling width THR</td><td>18</td><td>18</td></tr>
<tr><td>98</td><td>WOB INTV</td><td>Wobbling second interval</td><td>04</td><td>04</td></tr>
<tr><td>99</td><td>ERRPOL THR</td><td>MODE2 error possible THR</td><td>13</td><td>13</td></tr>
<tr><td>9A</td><td>MAXCHK THR</td><td>MAX CHECK THR</td><td>12</td><td>12</td></tr>
<tr><td>9B</td><td>REWOB THR</td><td>Wobbling second THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9C</td><td>MODE2 INOUT</td><td>MODE2 speed switchover</td><td>8B</td><td>8B</td></tr>
<tr><td>9D</td><td>SMLWD THR</td><td>Small frame THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9E</td><td>ZOOM PULSE LIMIT</td><td>Maximum zoom pulse value</td><td>EE</td><td>EE</td></tr>
<tr><td>9F</td><td>ZOOM RIZE</td><td>Zoom rise minimum speed time</td><td>0A</td><td>0A</td></tr>
<tr><td>A0</td><td>FB CURVEPEAKL</td><td>Constant for flange back adjustment</td><td>F5</td><td>F5</td></tr>
<tr><td>A1</td><td>FB CURVEPEAKH</td><td>Constant for flange back adjustment</td><td>0B</td><td>0B</td></tr>
<tr><td>A2</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>5D</td><td>5D</td></tr>
<tr><td>A3</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>06</td><td>06</td></tr>
<tr><td>A4</td><td>LIMITREST WIDE</td><td>Zoom limiter WIDE side</td><td>14</td><td>14</td></tr>
<tr><td>A5</td><td>LIMITREST TELE</td><td>Zoom limiter TELE side</td><td>0F</td><td>0F</td></tr>
<tr><td>A6</td><td>FB PEAKTHR</td><td>Constant for flange back adjustment</td><td>FF</td><td>FF</td></tr>
<tr><td>A7</td><td>FB FOCUSZERO</td><td>Constant for flange back adjustment</td><td>1C</td><td>1C</td></tr>
<tr><td>A8</td><td>DET IRIS ALT</td><td>Iris variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>A9</td><td>DET AGC ALT</td><td>AGC variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>AA</td><td>LIMIT INSURANCE</td><td>Focus limiter insurance value</td><td>02</td><td>02</td></tr>
<tr><td>AB</td><td>FOCUS MODE</td><td>Focus mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>08</td><td>Zoom, Focus fixed</td></tr>
<tr><td>00</td><td>Normal</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AC</td><td>LENS ADJ MODE</td><td>Flange back adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Nomal</td></tr>
<tr><td>01</td><td>Flange back adjustment</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AD</td><td>LENS EMRG</td><td>Lens emergency</td><td>00</td><td>00</td></tr>
<tr><td>AE</td><td>NTSC PAL/H DEF DELAY</td><td>DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay</td><td>21</td><td>21</td></tr>
<tr><td>AF</td><td>FT SW</td><td>DDS display mode switchover
<table>
<tr><th>Data</th><th>DDS display mode</th></tr>
<tr><td>00</td><td>Y sampling display</td></tr>
<tr><td>03</td><td>R–Y, B–Y display</td></tr>
<tr><td>40</td><td>HALL data display</td></tr>
<tr><td>82</td><td>R ratio display</td></tr>
<tr><td>83</td><td>B ratio display</td></tr>
<tr><td>91</td><td>R, B ratio (M) display</td></tr>
<tr><td>B0</td><td>Focus step display</td></tr>
</table></td><td>00</td><td>00</td></tr>
</table>

Table 7-2 (5).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	CORE MODE DATA 13 byte	10	10
B1	CORE Y GAIN	CORE FIELD DATA 0 byte	3A	3A
B2	LOW LIGHT CS	Low light chroma suppress start point	80	80
B3				
B4	E LOW LIGHT START 2	Low light REF level modulation start 2	80	80
B5	E LOW LIGHT LEVEL	Low light REF level modulation level	F0	F0
B6	ZOOM DROP 1	F-No. dropping (1) by Zoom lens	60	60
B7	ZOOM DROP 2	F-No. dropping (2) by Zoom lens	75	75
B8				
B9				
BA	AWB IN B HYS	Hysteresis of AWB indoor BLUE	04	04
BB	AWB IN R HYS	Hysteresis of AWB indoor RED	02	02
BC	AWB KAKE NORM R	ADD: 35 NORM R × 1000H	20	20
BD	AWB KAKE NORM B	ADD: 36 NORM B × 1000H	20	20
BE	MF STEP CHNGE	Coefficent of MODE 2 THR	06	06
BF	ZOOM SPEED SUPER LOW	Zoom speed (supper low)	07	07
C0	MAX CHECK NG CNT	MAX CHECK NG count	14	14
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	Low light AE fluctuation THR 1	28	28
C3	AE Y MIN	Low light AE fluctuation THR 2	20	20
C4	MD2 SPD	Focus speed at MODE 2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOW CON THR	THR 1 for judging Low-contrast at MODE 2	10	10
C7	LOW CON THR2	THR 2 for judging Low-contrast at MODE 2	20	20
C8~EF		Not used		
F0		Input column of the unit ID No., etc. Not related to unit operations.Lens emergency	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 7-2 (6).

7-1-6. 6 Page, 1 Page Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (1) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01 10 11	Camera adjustment mode (1), F page write protect released Normal Camera adjustment mode (2), F page write protect released
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00 01 03 05 07 09 0B 0D 0F 11 13 15 17 1D	Normal IRIS OPEN, AGC HOLD IRIS CLOSE1, AGC HOLD IRIS CLOSE2, AGC MIN IRIS CLOSE3, AGC MAX ND0.5 SHUTTER (PAL=1/160, NTSC=1/190) ND0.8 SHUTTER (PAL=1/320, NTSC=1/380) AWB PRESET1: 3200K PRESET DATA take in WB 3200K PRESET: Indoor white balance mode AWB PRESET2: Preparation of 3200K PRESET DATA take in ZOOM HUNTING1 ZOOM SPDSLOW ZOOM HUNTING2 ZOOM SPDFAST AE FB adjustment mode (IRIS: OPEN, AGC: REF, SHUTTER: 1/100 (NTSC), 1/120 (PAL)) EEPROM PRE WRITE: Page F initial data write
05	Shutter mode	00 15	NTSC=1/60, PAL=1/50 1/2000
06	FOCUS limiter ON/OFF	00 01	FOCUS limiter ON (Normal) FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00 01	ZOOM limiter ON (Normal) ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00 01 02 03	Normal ZOOM speed SLOW ZOOM speed FAST ZOOM speed SUPER SLOW
09 ★	COMPLEATED FLAG	00 01	Camera Adjustment not completed Camera adjustment completed
11 ★	ROM VERSION	01 02 03	Camera micro processor ver1 Camera micro processor ver2 Camera micro processor ver3
0C ★	LENS INITIAL END	00 01	During the initial operation of the lens Lens initial operation completed

Addresses with ★ are exclusively for reading.

Table 7-3.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 7-4.

7-1-7. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-112P board. Connect the oscilloscope and etc. via the measuring pin (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	NC	4	CAM SI
5	NC	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	14 MHz	18	CAM Y

Table 7-5.

7-1-8. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-6. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① → **B (b)**	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-6.

7-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-47P Board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑦ and ⑧ of W401
Specified value	4.91 ± 0.1 Vdc
D4V check	
Measurement point	Pin ④ of W401
Specified value	4.06 ± 0.1 Vdc
CAM 5V check	
Measurement point	Pins ⑨ and ⑩ of W401
Specified value	4.89 ± 0.15 Vdc
CAM 15V check	
Measurement point	Pin ⑫ of W401
Specified value	15.09 ± 0.3 Vdc
CAM -9V check	
Measurement point	Pin ⑪ of W401
Specified value	-8.8 ± 0.7 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Check that the data of page: 6, address: 09 is 00.
   (Display indicating that page F data can be initialized)
2) Check that the data of page: 6, address: 01 is 00.
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Page F data initialization execution.
   The data of all addresses of page F will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
   (Displays that the initialization of page F data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
   (Releases the page F data initialization mode)
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification

The data (initial data) that is automatically written on page F after the initialization of the page F data will differ according to some camera micro processor versions. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Address	Data	Address	Data
00 (ID)	26	4E (AWB TOP DWN)	60
0A (E LOWLIGHT START)	20	51 (AWB R TOP LMT)	6E
0F (CORE APCN 4)	A5	58 (AWB B DWN LMT)	1B
10 (CORE APCN 5)	3D	5B (AWB M DIVID)	39
11 (CORE EFFECT)	A8	5C (AWB DELAY TM)	0C
12 (CORE MAT R)	27	62 (AE REFH)	18
13 (CORE MTT B)	6C	68 (AE FUNCTION)	02
14 (CORE BURST LEVEL)	38	6A (JITEISU DOWN)	28
15 (CORE CHROMA DLY)	01	6B (JITEISU UP)	0D
17 (CORE VHAPCN)	15	8C (ZOOM SPD FAST)	73
41 (AWB BOTTOM SLP R)	48	8D (ZOOM SPD SUPER)	6A
42 (AWB BOTTOM SLP B)	78	8E (ZS INIT SLOW)	6A
43 (AWB MIDDLE SLP R)	60	8F (ZS INIT FAST)	6A
44 (AWB MIDDLE SLP B)	40	94 (ZOOM SPD SLOW)	29
45 (AWB TOP SLP R)	66	9E (ZOOM PULSE LIMIT)	EE
46 (AWB TOP SLP B)	18	AE (NTSC PAL/H DEF DELAY)	21
49 (AWB BOTTOM UP)	C2	B0 (CORE OTHER)	10
4A (AWB BOTTOM DWN)	94	B1 (CORE YGAIN)	3A
4B (AWB MIDDLE UP)	AD	B2 (LOW LIGHT CS)	80
4C (AWB MIDDLE DWN)	96	BD (AWB KAKE CHNGE)	20
4D (AWB TOP UP)	78	C0 (MAX CHECK NG CNT)	14

[Distinguishing the Camera Micro Computer (IC709) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.2	CXP80624-285R	02
Ver.3	CXP80624-298R	03

4. 28 MHz Original Oscillation Adjustment (VC-112P Board)

Subject	Not required
Measurement Point	Pin ⑰ of IC706 (14 MHz)
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14187500 ± 71 Hz

Adjusting method:

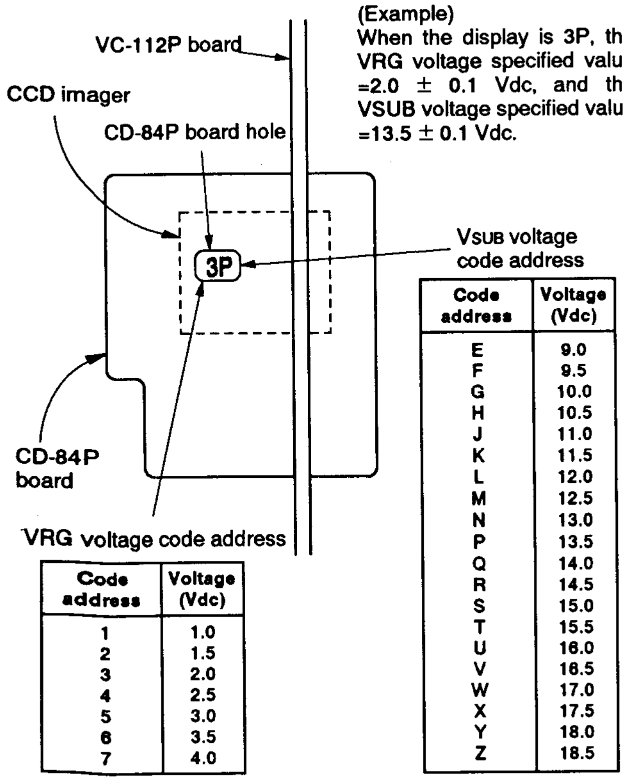
1) Use CT801 to adjust the oscillation frequency to 14187500 ± 71 Hz.

5. V SUB Adjustment (VC-112P Board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =13.5 ± 0.1 Vdc.

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

Code address	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5
Y	18.0
Z	18.5

Fig. 7-7.

6. VRG Adjustment (VC-112P Board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchaning a camera micro processor or EEPROM (IC712).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of DD-47P board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit before changing addresses.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on the shield case (UPPER) of DD-47P board.

8. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and set to W_2.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and set to W_1.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and set to K_1.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and set to K_2.
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \cdots\cdots \text{Equation 1}$$

$$B' = W_1' - K_1' \cdots\cdots \text{Equation 2}$$

$$X_1' = \frac{2048 + (48 \times A') - (16 \times B')}{A'} \cdots\cdots \text{Equation 3}$$

14) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS CLOSE mode setting)
19) Read the DDS display data, and set to W_0. If W_0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert W_0 to hexadecimal notation, and obtain W_0'.
21) Calculate X_2' using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 51 \cdots\cdots \text{Equation 4}$$

$$X_2' = \frac{(128 - B') \times (X_1' - 48) + 48 \times C'}{C'} \cdots\cdots \text{Equation 5}$$

    (X_1' and B' are values obtained from equations 2 and3)
22) Convert X_2' to hexadecimal notation and obtain X_2.
    (Round off to one decimal place)
23) Set data X_2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
    (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

9. Flange Back Adjustment

Subject	Chart for flange back adjustment (1998 ± 5mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Check that the page: F, address: 86 to 8B data is at the initial value. (Refer to Table 7-2. "Page F address list")
7) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
8) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

10. Flange Back Check

Subject	Siemens star (2m (or 1.4m) from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	$D_2=D_1 \pm 3$

Checking method:

1) Set data: 11 to page: 6, address: 00. (Camera adjustment mode 2)
2) Set data: B0 to page: F, address: AF. (Focus step display mode)
3) Place the Siemens star 2m (or 1.4m) from the front of the lens.
4) Adjust the EXPOSURE knob to set the lens full apearture. At this time, adjust the illumination on the Siemens star or place a ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
5) Turn off the auto-focus.
6) Shoot the Siemens star with the zoom TELE end.
7) Rotate the focus ring, and adjust the focus.
8) Adjust to the zoom WIDE end.
9) Read the focus step value (4 digits) displayed on the TV monitor, and take the value as D_1.
10) Rotate the focus ring, and adjust the focus.
    Read the focus step value here, and take the value as D_2.
11) Check that $D_2=D_1 \pm 3$.

Process after checking

1) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.

11. SYNC Level Adjustment (VC-112P Board)

Subject	Not required
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	A=150 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

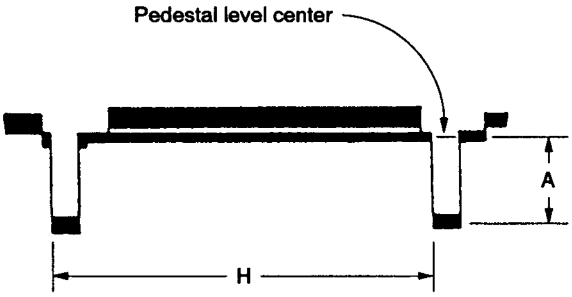


Fig. 7-8.

12. BURST Level Adjustment (VC-112P Board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	A=150 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

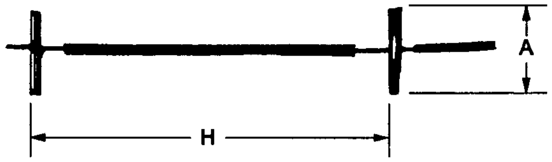


Fig. 7-9.

13. A/D Offset Adjustment

Subject	Not required
Measurement Point	DDS display on the EVF or the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	46 to 47

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Change the data of page: F, address: 0C, and adjust the average value of the DDS display (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor display) to 46 to 47.
   (Set the data of address 0C to the maximum value satisfying the specification.)
7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Turn the main power supply (6.3V) off.

14. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (SI OFFSET)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

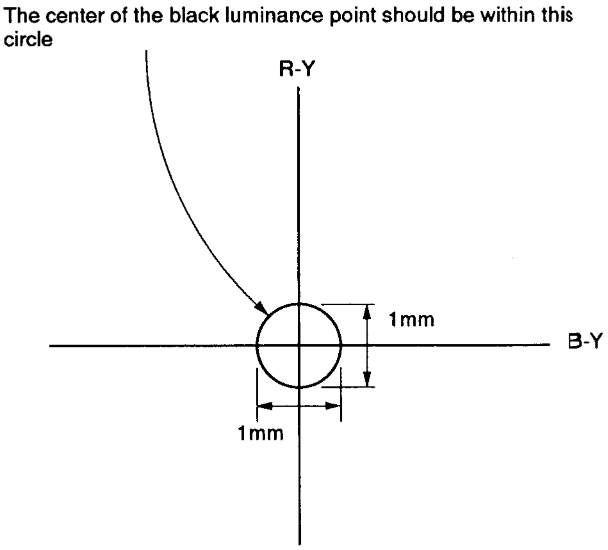

The center of the black luminance point should be within this circle
R-Y
1mm
B-Y
1mm

Fig. 7-10.

15. Picture Frame Setting

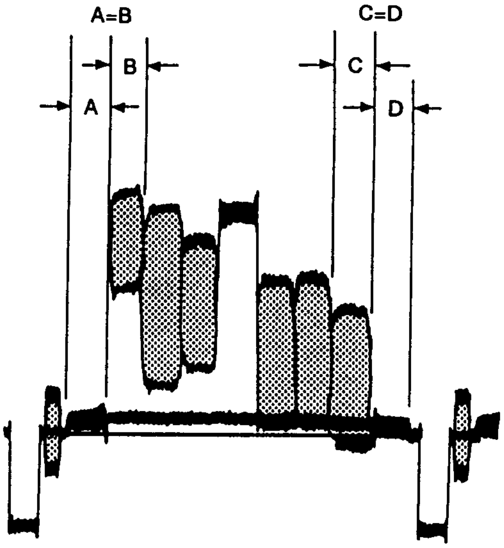
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

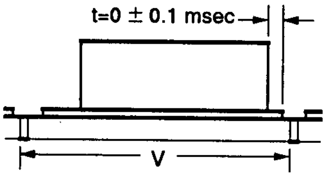


Fig. 7-11.

Check on the TV monitor

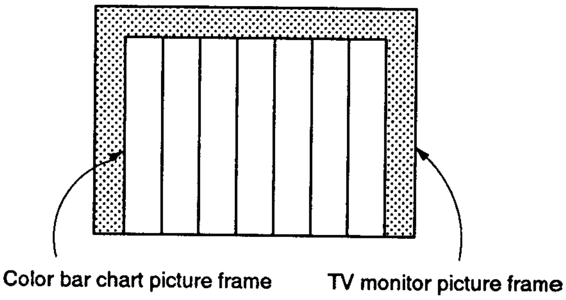

Color bar chart picture frame
TV monitor picture frame

Fig. 7-12.

16. IRIS Level Adjustment (VC-112P Board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

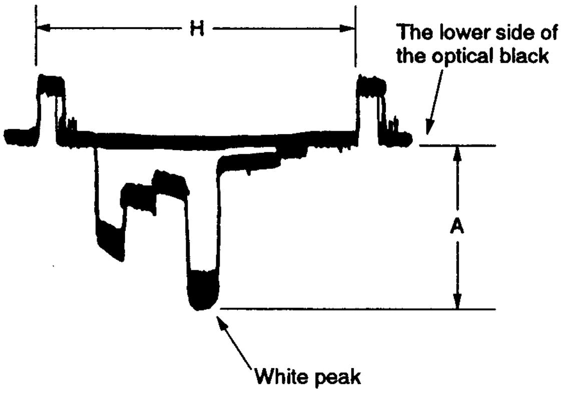


Fig. 7-13.

17. MAX GAIN Adjustment (VC-112P Board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	A=160 ± 5 mV

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

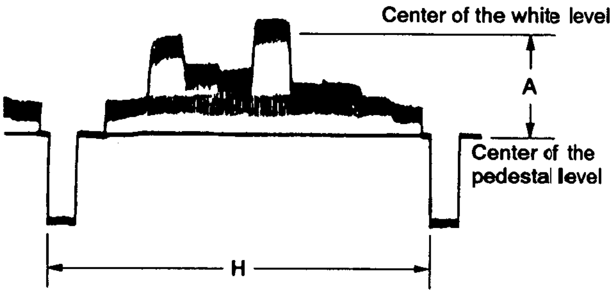


Fig. 7-14.

18. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and set to D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and set to D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

19. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1mm and whose center is the principle point

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

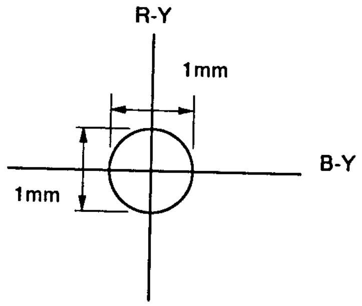


Fig. 7-15.

20. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B–Y GAIN), 19 (CORE R–Y GAIN), 1A (CORE R–Y HUE), 1B (CORE B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01 and press the PAUSE button of the adjustment remote control unit.
   (Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

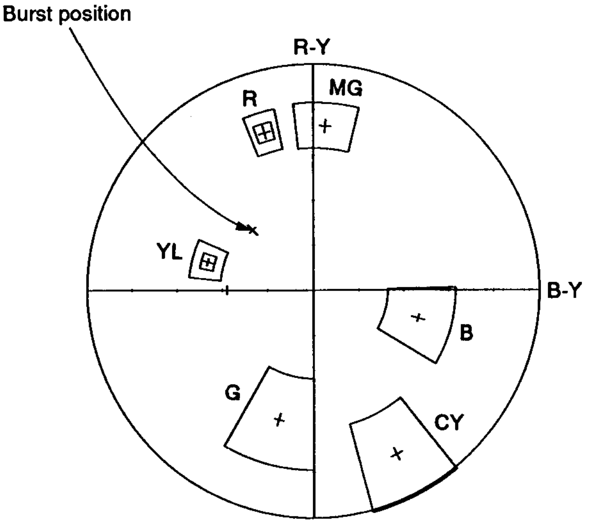


Fig. 7-16.

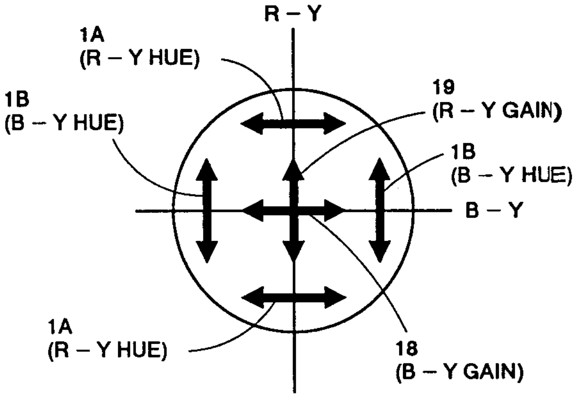


Fig. 7-17. Direction of the Movements of the Adjustment Address and Luminance Point

21. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 30 (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

22. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2C80 ± 40 B ratio 5A80 ± 40

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode 2 setting)
3) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
4) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
5) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2C80 ± 40.
6) Press the PAUSE button of the adjusting remote control unit.
7) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
8) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5A80 ± 40.
9) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode 2)

23. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-18. A to C

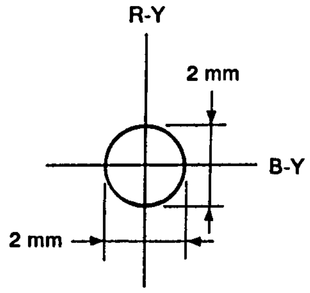


Fig. 7-18. A

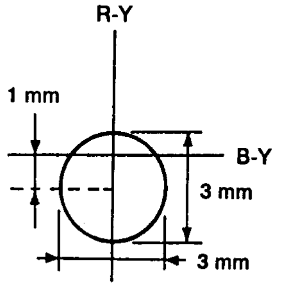


Fig. 7-18. B

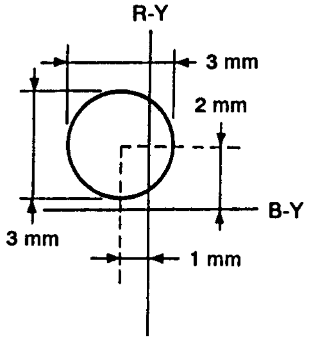


Fig. 7-18. C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
(Camera adjustment mode 2 setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-18.A.
(Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Auto white balance high speed tracking mode setting)
7) Check that the center of the white luminance point is within the circle shown in Fig. 7-18. A.
8) Place the C14 filter on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. B.
(Auto white balance outdoor mode check)
10) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
11) Check that the center of the white luminance point settles in the circle shown in Fig. 7-18. C.
(Auto white balance outdoor mode check)

Processing after completing adjustments

1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
(Release of the auto white balance fast tracking mode)
2) Set data: 10 to page: 6, address: 00.
(Release of camera adjustment mode 2)
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button.

24. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position that was set in the color bar chart picture frame "14. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   2. Set data: 2E to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Check that the colors on the monitor display at the color modulation stop mode have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 03 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y, B–Y data display mode setting)
6) Read the average value of the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or monitor TV), and set to Y_1.[Note3]
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Select page: F and read the average value of the DDS display data, and set to R_1.[Note3]
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Select page: F and read the average value of the DDS display data, and set to Y_2.[Note3]
12) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
13) Select page: F and read the average value of the DDS display data, and set to R_2.[Note3]
14) Convert Y_1, R_1, Y_2, R_2 to decimal notation to obtain Y_1', R_1', Y_2' and R_2'.
    (Refer to Table 7-6. "Hexadecimal notation-decimal notation conversion table")
15) Calculate X_1' from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
16) Calculate D_{3D} from the following table
    (D_{3D} is hexadecimal notation)

X_1' value	**D_{3D}**
$-1 \leqq X_1' \leqq 1$	F0
$X_1' > 1$	F1
$X_1' < -1$	FF

17) Set data: D_{3D} to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
18) Calculate X_2' from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
19) Calculate D_{3E} from the following table.

X_2' value	**D_{3E}**
$X_2' \geqq 0$	00
$0 > X_2' \geqq -1$	01
$-1 > X_2'$	02

20) Set data: D_{3E} to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 2C to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y, B–Y data display mode)
4) Turn the main power supply (6.3V) off.

Note 3: As the R-Y data and B-Y data are displayed alternatively, it will be difficult to read the R-Y data. Record this data on a tape, and perform frame advancing playback so that only the R-Y data is read.
(Example)
If the frame advancing playback is performed, the following will be displayed.
$\underline{81} \rightarrow 7A \rightarrow \underline{82} \rightarrow 7A \rightarrow \underline{80} \rightarrow 7A \rightarrow \underline{81} \rightarrow 7C \rightarrow \underline{81} \rightarrow 79$
As the R-Y data is above 80, and the B-Y data is below 7F, the data which is underlined is the R-Y data. If the average value is calculated, the R-Y data will become 81.

25. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=660 ± 50 mV SYNC level=300 ± 20 mV BURST level=300 ± 40 mVp-p

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

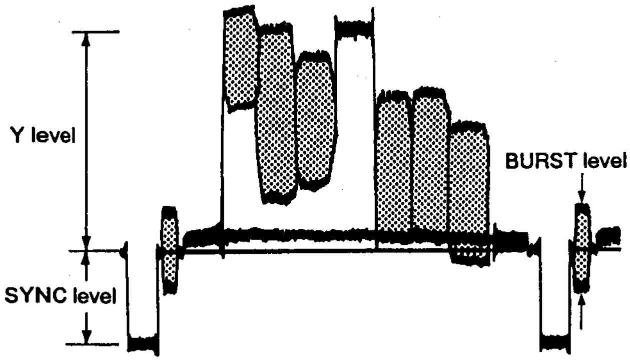


Fig. 7-19.

26. Title Color Reproduction Adjustment

Subject	All black (Cover the lens with a black cap)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	14 (BLU R–Y), 15 (BLU B–Y), 16 (GRN R–Y), 17 (GRN B–Y), 18 (CYN R–Y), 19 (CYN B–Y), 1A (RED R–Y), 1B (RED B–Y), 1C (VIO R–Y), 1D (VIO B–Y), 1E (YEL R–Y), 1F (YEL B–Y)
Specified Value	Each title color luminance point should settle within each color reproduction frame.

Note: For details on the page D address list, refer to "Service mode" in "Video Section Adjustments".

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
   (Camera adjustment mode 1 setting)
2) Release the protect of page D.
   Page: 1, address: 00, data: 01
3) Press the superimpose button "memory".
4) Use the "color/mode" button to change the title color to "blue".
5) Change the data of addresses 14 and 15 of page D, and and settle the blue luminance points within the blue (B) color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses. If not, the new data will not be written to the memory.
6) Adjust for green (addresses 16, 17), cyan (addresses 18, 19), red (addresses 1A, 1B), violet (addresses 1C, 1D) and yellow (addresses 1E, 1F) in the same way.

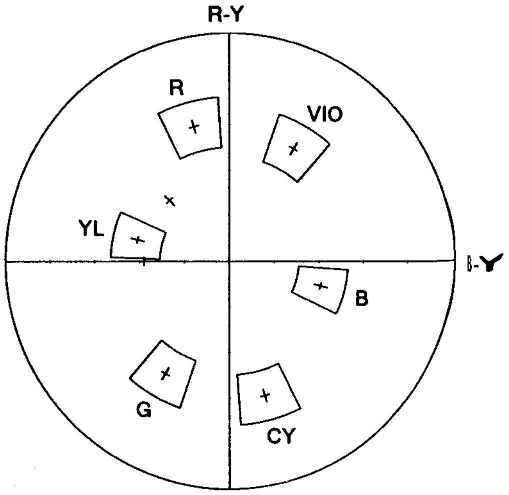


Fig. 7-20.

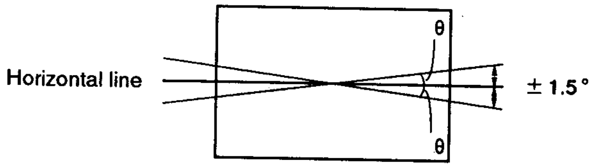
7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-21.

Adjusting method:

1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
   (Do not tighten it too tightly.)



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 7-21.

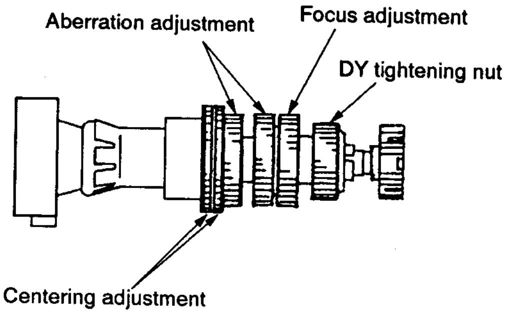


Fig. 7-22.

7-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Specified Value	Refer to Fig. 7-23.

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 7-22.)
   Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.

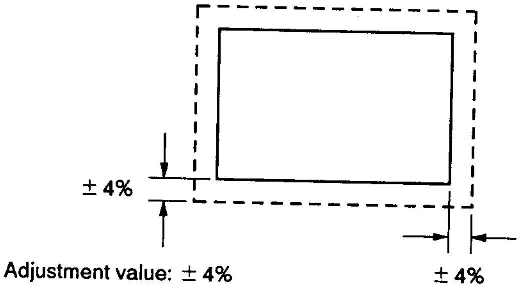


Fig. 7-23.

7-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 7-22.)

7-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 7-24.

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

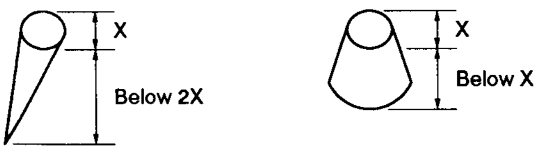


Fig. 7-24.

7-3-5. Horizontal Oscillation Frequency Adjustment (VF-42P Board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

1) Adjust to 2.60 ± 0.05 Vdc using RV501.

7-3-6. Horizontal Amplitude Adjustment (VF-42P Board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 7-26.)

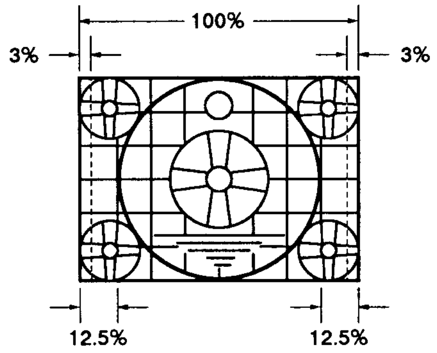
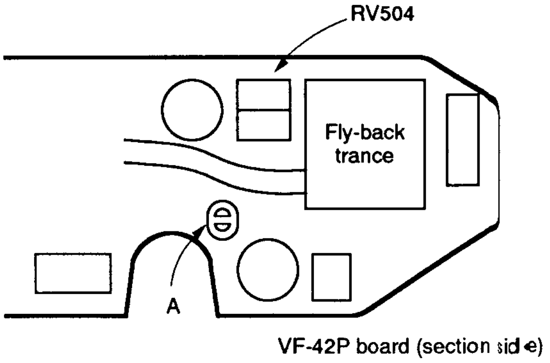


Fig. 7-25.



Section A	Size H
Open	Small
Short	Big

Fig. 7-26.

7-3-7. Vertical Amplitude Adjustment (VF-42P Board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

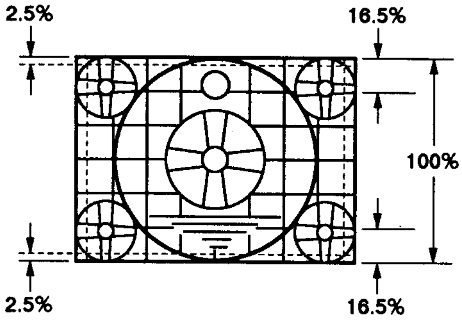


Fig. 7-27.

7-3-8. Brightness, Contrast Adjustments (VF-42P Board)

Model	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

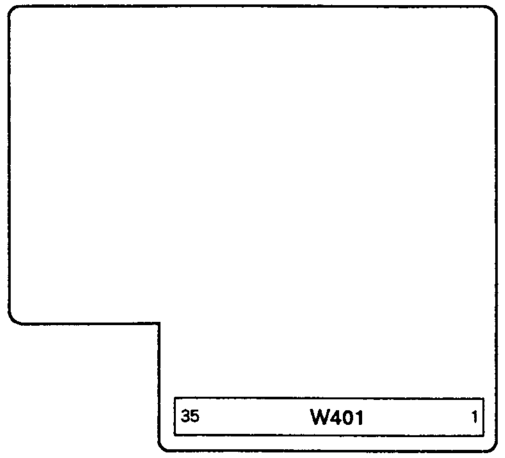
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

7-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

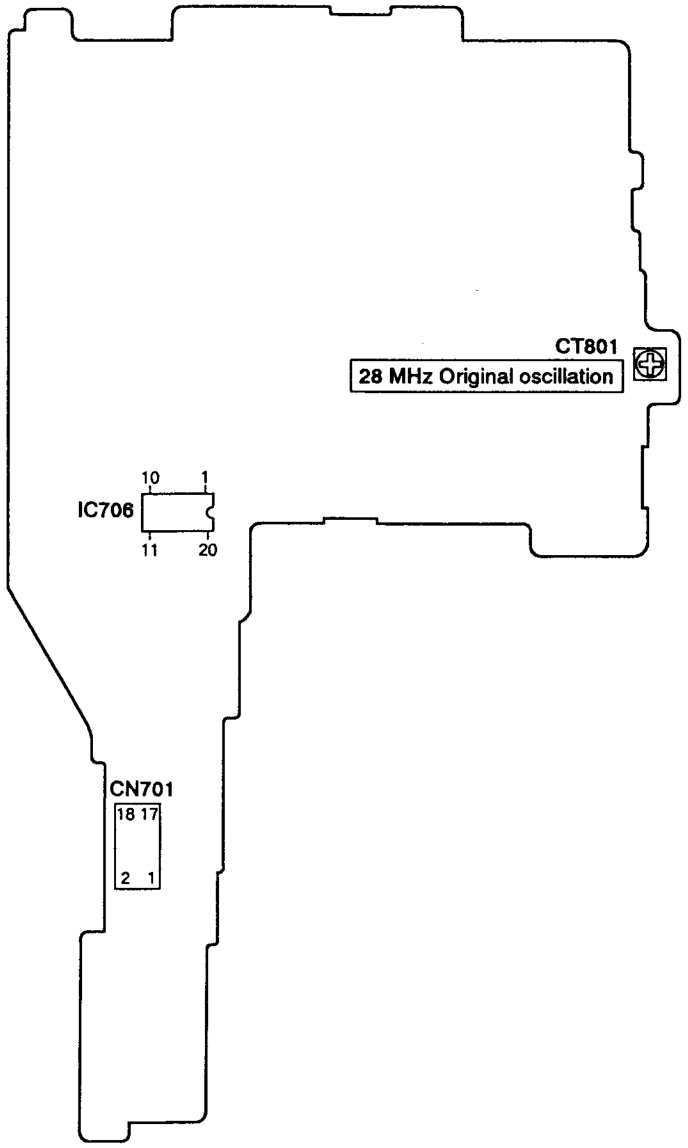
"7-3-6. Horizontal Amplitude Adjustment" and "7-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform [7-3-8. Brightness, Contrast Adjustments] again. Moreover, check the focus, and if it found to be vague, perform "7-3-3. Focus Adjustment" and "7-3-4. Aberration Adjustment".

7-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

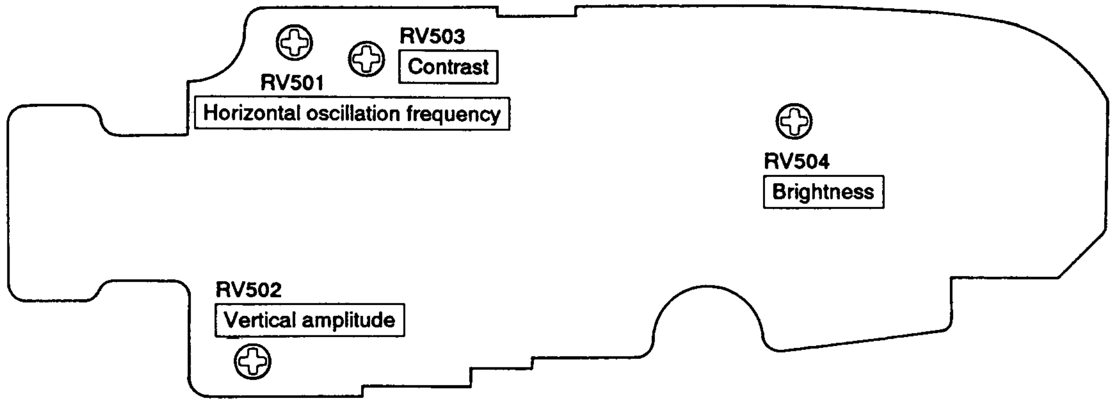
DD-47P BOARD (COMPONENT SIDE)



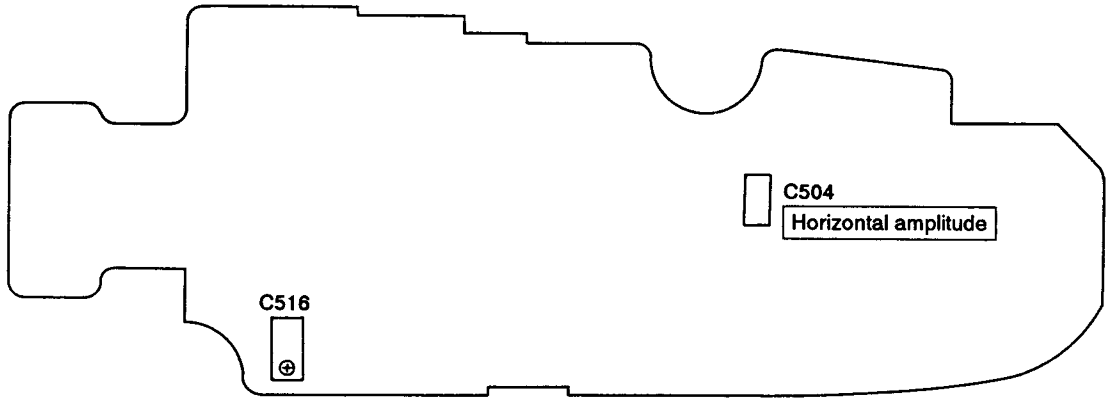
VC-112P BOARD (CONDUCTOR SIDE)


CT801
28 MHz Original oscillation
IC706
10
1
11
20
CN701
18 17
2 1

VF-42P BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VF-42P BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

SECTION 8
MECHANICAL SECTION ADJUSTMENTS

Mechanical Section Adjustments

For details on the adjustments and checks of mechanical section and the mechanical parts, refer to the separate volume-"8 MM Video Mechanical Section Adjustment Guide II FL mechanism (Q mechanism)".

8-1. OPERATING WITH THE CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED (Refer to Fig. 8-1.)

1. Loading

1) Refer to "2. Removal", and supply the power with the external section removed (however, leave the LJ-9P board connected so that the adjusting remote control unit can be connected.). (So that the mechanical deck section can be operated.)
2) Connect the adjusting remote control unit, and turn ON the HOLD switch.
3) Select page: 1, address: 00, and set data: 01. (Release of the protect)
4) Select page: D, address: 01, and set data: 01. (Test mode 1 setting)
5) Press the PAUSE button of adjusting remote control unit.
6) Turn off the HOLD switch of the adjusting remote control unit. (The adjusting remote control unit can be disconnected after this.)
7) The unit will be set into the loading mode when the lock board release arm ① is pressed in the direction of the arrow. (To set the unit into the record mode, hold the push switch ② in place with the cohesion tape ③ before performing this operation.)
8) After completing all operations, be sure to perform "5. Processing after completing operations".

2. Setting the unit into the playback condition

1) Perform steps 1) to 7) of "1. Loading".
2) Press the playback button.

3. Setting the unit into the recording condition

1) Perform steps 1) to 7) of "1. Loading".
2) Press the record switch.

Note: Refer to "VIDEO SECTION ADJUSTMENT" to set the models without the record switch into the record condition.

4. Ejecting

1) Press the EJECT button.

5. Processing after completing operations

1) Connect the adjusting remote control unit, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 01, and set data: 00.
4) Press the PAUSE button of the adjusting remote control unit.
5) Remove the power supply from the unit.

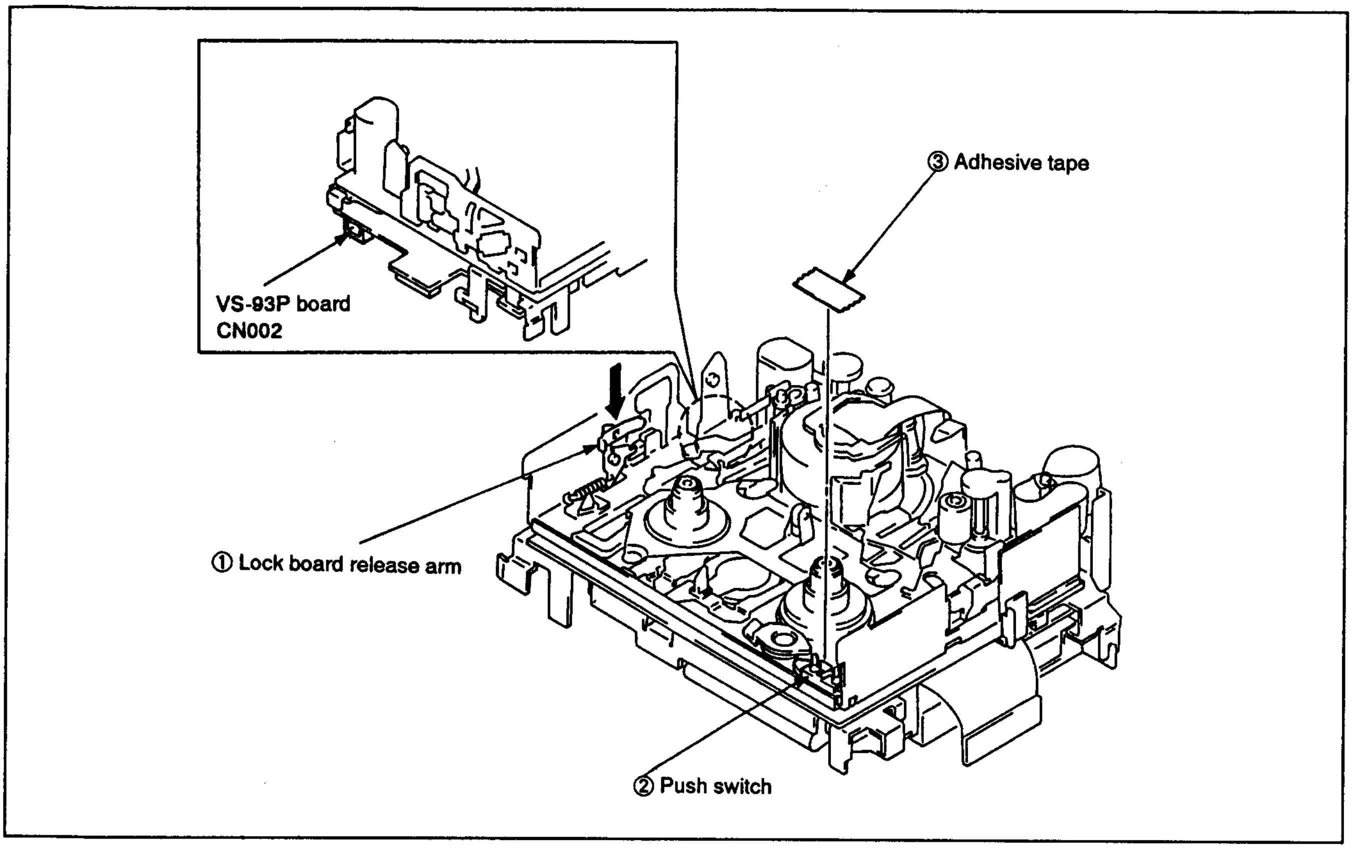

VS-93P board
CN002
③ Adhesive tape
① Lock board release arm
② Push switch

Fig. 8-1.

8-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustment

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote control unit to the remote terminal (LJ-9P board J971).
3) Turn on the HOLD switch of the adjusting remote control unit.
4) Select page: 1, address: 00, and set data: 01.
   (Release of the protect)
5) Select page: D, address: 01, and set data: 03.
   (Set the track shift mode. The adjusting remote control unit can be disconnected if its PAUSE button is pressed. In this case, be sure to perform "8-1-5. Processing after completing operation" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-VS-93P board Pin ⑭ of CN002
   External trigger-VS-93P board Pin ⑨ of CN002
   (Connect the oscilloscope via the measuring pin for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1CP) for tracking.
8) Confirm that the SP/LP switch is SP position.
9) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit sides.
   If not, perform the following adjustment.
10) Perform "8-1-5. Processing after completing operations", after completing adjustments.

VS-93P board CN002

1	N.C
2	N.C
3	RF GND
4	CAP FG
5	REC 1B
6	REC 2B
7	REC 1A
8	REC 2A
9	RF SWP
10	$\overline{\text{1/2 RF SWP}}$
11	PB RF CH1
12	PB RF CH2
13	RF GND
14	PB RF OUT

SECTION 9
VIDEO SECTION ADJUSTMENT

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 262.

9-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

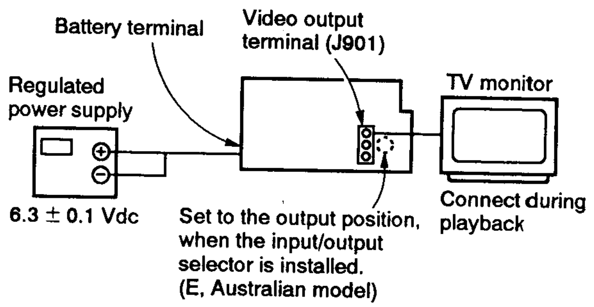
9-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
    Part Code: 8-967-995-07
    For video frequency characteristics adjustment
    (WR5-7CE)
    Part Code: 8-967-995-18
    (WR5-6C)
    Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)[Note 1]
    Part Code: 8-967-995-56
    (WR5-5CSP)[Note 2]
    Part Code: 8-967-995-47
    (WR5-8CSE)
    Part Code: 8-967-995-48
    For checking AFM stereo operations (WR5-9CS)
    Part Code: 8-967-995-28
    Note: The following alignment tapes can also be used.
    1) WR5-3CL (8-967-995-36)
    2) WR5-4CSP (8-967-995-46)
12) Remote control unit for adjustment (J-6082-053-B)
13) JK-3100 board extension cord (10P, 1 mm)
    Part Code: J-6082-064-A
14) AU-135P board, Cabinet (R) extension cord (30P, 0.8 mm)
    Part Code: J-6082-135-A
15) Measuring pin for video section
    Part Code: J-6082-140-A

9-1-2. Connecting the equipments

Unless specified otherwise, connect the measuring instruments as shown in Fig. 9-1 and perform the adjustments.

- Camera/video (or player) power switch ·······Position of the video (or player)
- Connect the adjusting remote control unit to the remote terminal (LJ-9P board J971).


Battery terminal
Video output terminal (J901)
Regulated power supply
TV monitor
6.3 ± 0.1 Vdc
Set to the output position, when the input/output selector is installed. (E, Australian model)
Connect during playback

Connect the pattern generator as follows.
Connect pin ⑩ of CN101 to GND with a jumper wire.

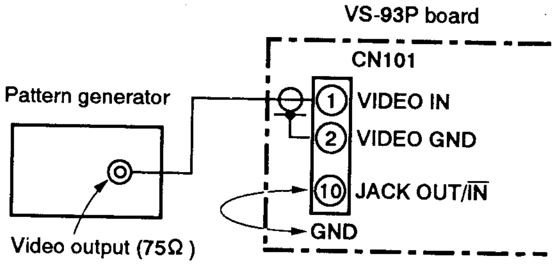

VS-93P board
CN101
Pattern generator
① VIDEO IN
② VIDEO GND
⑩ JACK OUT/IN
GND
Video output (75Ω)

Fig. 9-1.

9-1-3. How to Set the REC Mode in the Model without REC Switch

1. REC key forbidden accept mode cancel
   1. Connect the adjustment remote controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 83. (REC key forbidden accept mode cancel)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure. The adjustment remote controller may be removed, hereafter.

2. REC mode setting
   1. Connect Pin ⑦ of CN502 (KEY IN 2) and Pin ⑩ of CN502 (KEY OUT 0) on LC-40P board with a jumper wire until the VTR is set to REC mode.

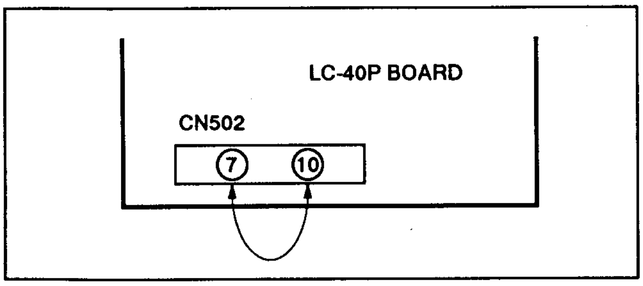


Fig. 9-2.

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbidden accept mode after adjustment.
   1. Connect the adjustment remoter controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 82. (Setting of the REC key forbidden accept mode)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

9-1-4. Precautions upon adjustment

The EVF (Electronic viewfinder) is not required for adjusting the video section.
Remove the following connector when removing the EVF section.

1. VS-93P board CN102 (6 pin)

The front panel section assembly is not required for adjusting the video section. Remove the following connectors when removing the front panel section assembly.

1. MA-143P board CN553 (5 pin)
2. MF-175P board CN996 (14 pin)

The cabinet (R) is required for adjusting the video section. Use the extension cord (J-6082-135-A) when adjusting the video section.

Connect the cabinet (L) (JK-3100 board) with an extension cord (J-6082-064-A).

9-1-5. Connectors for adjustments (VS-93P board CN002)

Some video section adjustment points are concentrated on the VS-93P board CN002. Connect the measuring instrument via a measuring pin jig (J-6082-140-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	N.C	2	N.C
3	RF GND	4	CAP FG
5	REC 1B	6	REC 2B
7	REC 1A	8	REC 2A
9	RF SWP	10	$\overline{\text{1/2 RF SWP}}$
11	PB RF CH1	12	PB RF CH2
13	RF GND	14	PB RF OUT

Table 9-1.

9-1-6. Set-up during Adjustment

As the video signal obtained from the pattern generator is used as an adjustment signal during electric adjustments, ensure that this video output signal is within the specification. Connect the oscilloscope to pin ① of CN101 on the VS-93P board, and check that the amplitude of the sync signal of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66. The video signal (color bar) used for electric adjustments is shown in Fig. 9-3.

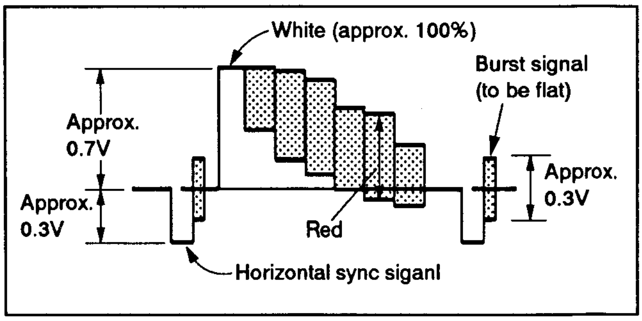


Fig. 9-3. Color bar signal of pattern generator

9-1-7. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Recording mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6C	L	MP	LP	RF sweep: 0 to 10 MHz Marker: 1, 3.58, 5.5, 7 MHz		Frequency characteristics adjustment
Video frequency characteristics (Hi8 mode) WR5-7CE	E	ME	LP	RF sweep: 0 to 15 MHz Marker: 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Color bar section Repeated 4 times 1 kHz 4 minutes	Checking operations
Operation check (LP mode) WR5-4CL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		
Operation check (Hi8 SP mode) WR5-8CSE	E	ME	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9CS	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz (L+R: 1.5 MHz ± 60 kHz DEV L–R: 1.7 MHz ± 30 kHz DEV) Bilingual section (Monoscope) MAIN: 400 Hz (1.5 MHz ± 60 kHz DEV) SUB: 1 kHz (1.7 MHz ± 30 kHz DEV)	• Audio signal (PCM) 400 Hz	AFM stereo Checking operations

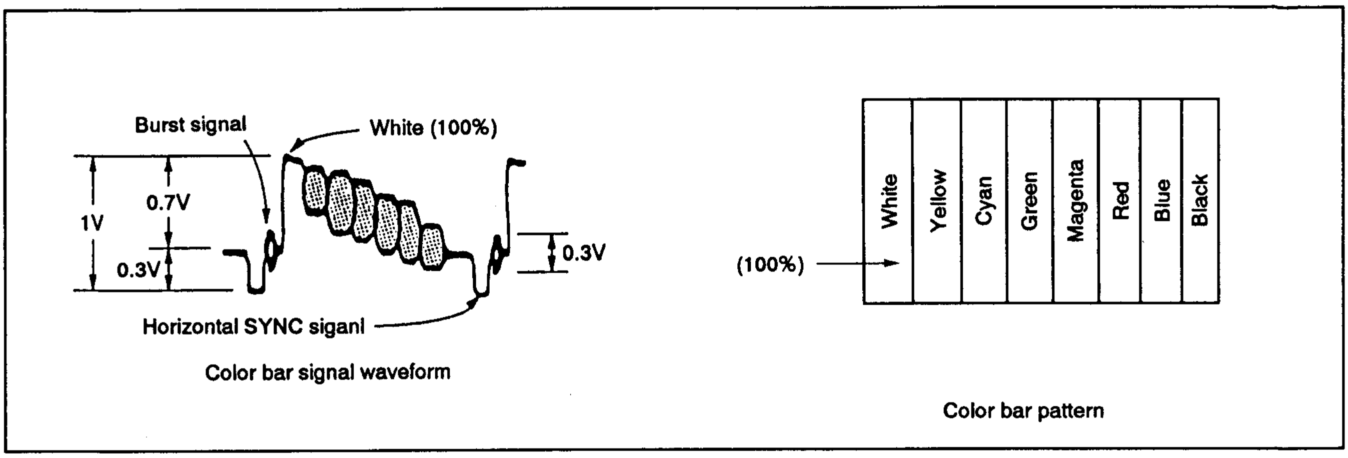
Note: Recording mode
L ·············· Conventional mode
E ·············· hi8 (hi band) mode

Tape type
MP············ Particle type metal tape
ME············ Evaporated type metal tape

Table 9-2.

Fig. 9-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure at the video output terminal (Terminated at 75 Ω)


Burst signal
White (100%)
1V
0.7V
0.3V
0.3V
Horizontal SYNC siganl
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal waveform

Color bar pattern

Fig. 9-4. Alignment tape color bar signal

9-1-8. Input/Output Level and Impedance

1. E, Australian, Tourist model

[I/O level and Impedance]

Video input/output	phone jack Input signal: 1 Vp-p, 75Ω unbalanced, negative sync
Audio input/output	phone jack Input level: –7.5 dBs (0 dBs=0.775 Vrms) Input impedance: More than 47 kΩ Output level: –7.5 dBs (at output impedance 47 kΩ) Output impedance: More than 2.2 kΩ

2. AEP, UK model

[I/O level and Impedance]

Video output	phone jack Output signal: 1 Vp-p, 75Ω unbalanced, negative sync
Audio output	phone jack Specified output: –7.5 dBs Output impedance: More than 2.2 kΩ

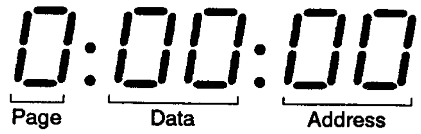
9-1-9. Service Mode

1. Setting the Service mode

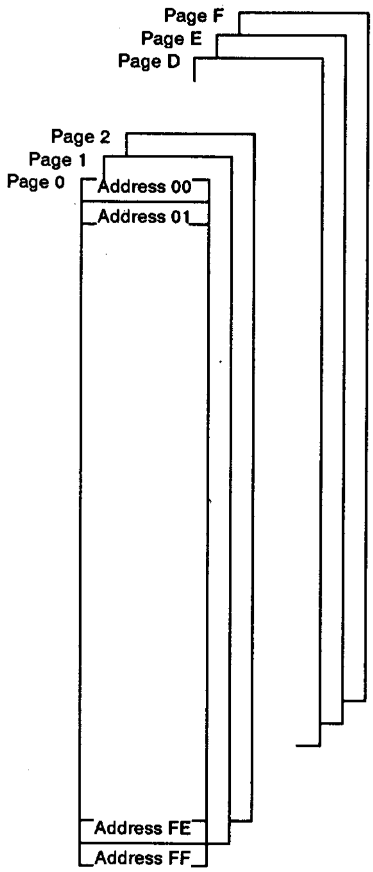
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

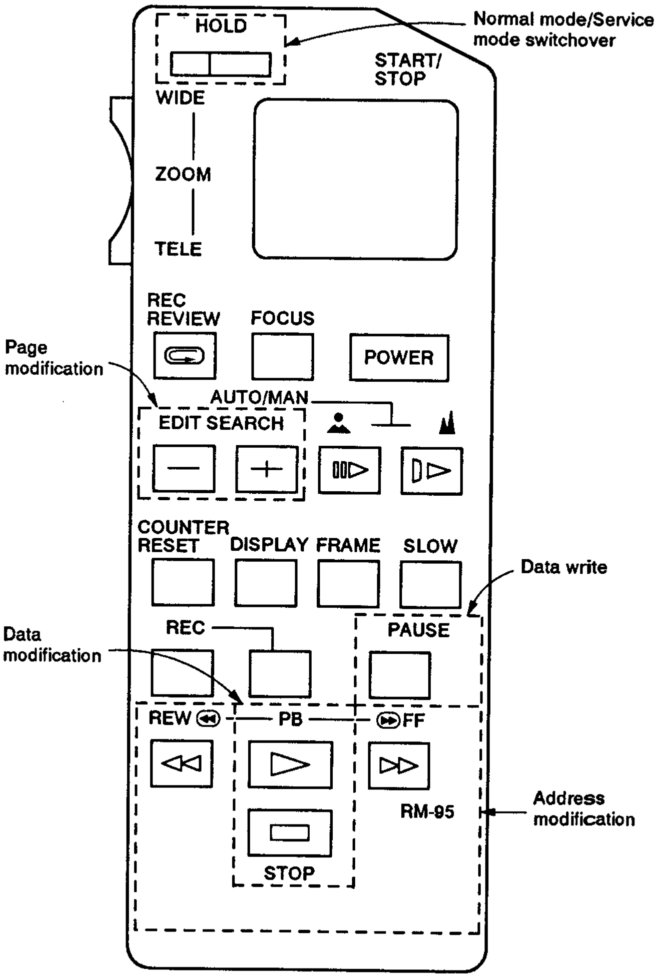
Adjusting Remote Control Unit LCD Display


0:00:00
Page
Data
Address

(1) Service LANC memory map

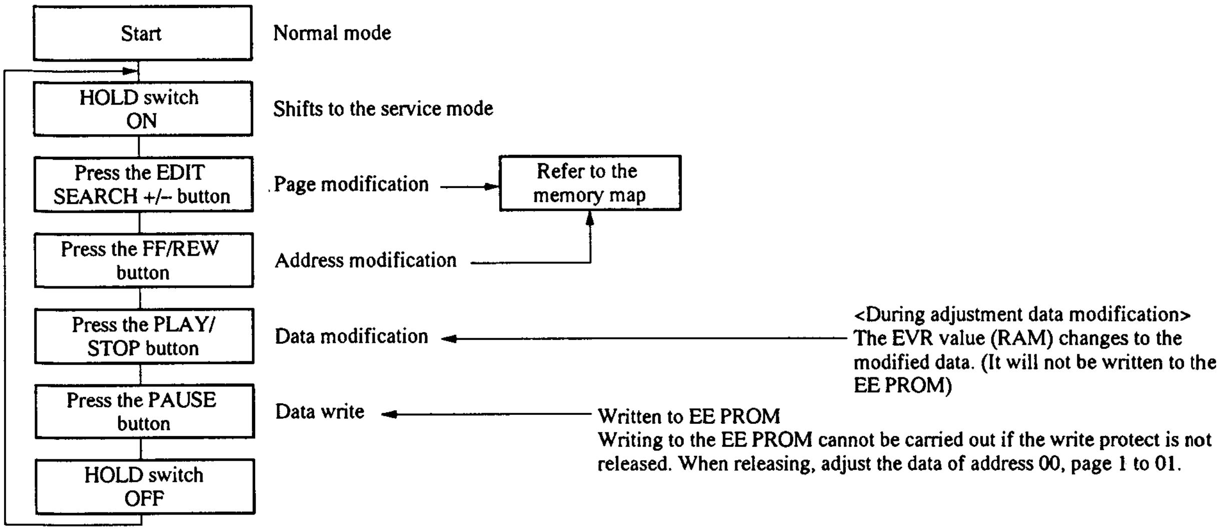

Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Adjusting remote control unit RM-95 (J-6082-053-A)


HOLD
Normal mode/Service mode switchover
START/STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
Data modification
REC
PAUSE
REW
PB
FF
RM-95
Address modification
STOP

Page	Page allocation	Description
0	Not used	
1	Mode Control RAM, I/O	RAM and I/O interface data memory area required for operating the mode controller. Data is not held when the power is turned off because this area is not ROM.
2~4	Mechanical Control RAM, I/O	RAM and I/O memory area of the mechanical controller.
5	Not used	
6~8	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
9	Not used	
A	Camera Control RAM, I/O	RAM and I/O memory area of the camera control.
B, C	Not used	
D	VTR EE-PROM	ROM memory area of the VTR part. Data of this area is held by EE-PROM when the power is turned off. Releasing protect is required for changing data.
E	Not used	
F	Camera EE-PROM	ROM memory area of the camera part. Data of this area is held by EE•P•ROM when the power is turned off.

(2) Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01.

Command Name	**Command Function**	**Normal LANC command**
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Write the data to the EE PROM. RAM	Pause

2. Types of Self-diagnostic Feature

MODE		Contents
TEST	Camera adjustment	Refer to Camera Adjustment
	Switching position adjustment	Refer to each adjustment page
	Battery DOWN adjustment	
	Video, Audio adjustment	
ADJUST	Pass Adjustment track shift	When adjusting tape pass, set this mode and shift the tracking.
	Emergency STOP inhibition	Detection of emergency is inhibited. This allows the following items. • Power is not turned off when the battery is ended. • SP/LP is not automatically distinguished. • Emergence is not detected except for TOP/END detection of the TAPE.
	Read of emergence code	The following functions are added to the emergency display function currently in use. ① The lithium battery is not required because to memorize into EE-PROM is allowed. ② The first emergency and the last emergency are memorized. ③ The mode when the emergency is generated is memorized, in addition to the emergency contents.
	Motor single check	Rotating in forward direction, reverse direction, stopping of each motor can be separately controlled. • Drum motor • Capstan motor • Loading motor
	Function switch check	The acceptance of the function switch of the unit can be confirmed by designating an address. On the contrary, RM-95 can command the substitution for the function switch of the unit.
	Mechanical switch check	The contents of the mechanical switch and the mode switch can be confirmed.
	Sensor check	The following sensor is input by performing A/D converting, and the A/D converted value can be confirmed. TOP sensor, End sensor, S REEL FG, T REEL FG, Thermistor for SWP correction, DEW sensor.
	Reception contents check of wireless remote control	The received code contents of the remote control code can be confirmed.

3. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Write protect release

4. Page F Write Protect

Release/set the page F write protect.

Page 6	Address 00

Data	Function
10	Normal (Write protect condition)
01	Write protect release

5. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP) 5 minutes pause release inhibition Power off inhibition • release by battery end
02	Test mode 2 1'CH frequency response adjustment (Not used) SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs.

6. Emergency code

Troubles (errors) can be checked.

Page D	Address 06

First emergency code

……The first error code generated

Page D	Address 07

Last emergency code

…… The last error code generated (this data will be modified each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after resetting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	DRUM FG error during drum start up
06	DRUM PG error during drum start up
07	DRUM FG error during drum regular condition
08	DRUM PG error during drum regular condition
09	DRUM Phase error during drum regular

7. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08

First emergency mode
……The operation mode when the first error is generated

Page D	Address 09

Last emergency mode
……The operation mode when the last error is generated
(This data will be modified each time an error occurs.)

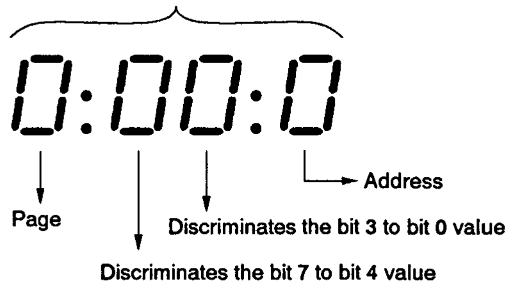
※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.
※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.
※ Addresses 08 and 09 of page 0 and addresses 08 and 09 of page D have the same functions.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(–)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

8. Bit value Discrimination

It is necessary to discriminate the bit value by the adjusting remote control unit display data for the following items. Discriminate if the bit value is "1" or "0" using the following table.

Adjusting remote control unit display


0:00:0
Address
Page
Discriminates the bit 3 to bit 0 value
Discriminates the bit 7 to bit 4 value

Remote Control Unit Display	Bit Value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
Ⓑ→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) When the remote control unit display data is "8E", the bit values of bit 7 to bit 4 can be discriminated from column Ⓐ, and that of bit 3 to bit 0 can be discriminated from column Ⓑ.

9. Check of Tape Distinction Switch, etc.

Page 1	Address 3E

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
				$\overline{\text{REC PROOF}}$	ME/$\overline{\text{MP}}$	Hi8/$\overline{\text{Normal}}$	

"1"=Recording impossible
"0"=Recording possible

"1"=ME tape
"0"=MP tape

"1"=Hi8 mode playback
"0"=Normal mode playback

Page 1	Address 23

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
					$\overline{\text{CC LOCK}}$		

"0"=During cassette compartment lock

Page 1	Address 3D

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
V MUTE	A MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	LP/$\overline{\text{SP}}$

"1"=LP mode playback
"0"=SP mode playback

"1"=SYNC is detected
"0"=SYNC is not detected

"1"=CLOG is detected
"0"=Normal

"1"=When the PB RF signals are being playback normaly
"0"=Others

"1"=JOG mode
"0"=Other

"1"=Playback mode
"0"=Others

"1"=AUDIO MUTE: ON
"0"=AUDIO MUTE: OFF

"1"=VIDEO MUTE: ON
"0"=VIDEO MUTE: OFF

Page 1	Address 42

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	PB 1.7M DET	$\overline{\text{JACK MONO}}$	$\overline{\text{MIC MONO}}$			DEW	

“0”=Dew outbreak
“1”=Others

“0”=During monaural external microphone use
“1”=Others

“1”=Audio input/output terminal (right) open condition
“0”=Audio input/output terminal (right) connection condition

“1”=During AFM stereo/bilingual tape playback
“0”=Others

10. Mode Switch Check

The mode switch position (mechanical section condition) can be checked.

Page 1	Address 3E

Mode switch position	Adjusting remote control display data	Bit 7 (MODE SW C)	Bit 6 (MODE SW B)	Bit 5 (MODE SW A)
EJECT	8*	1	0	0
USE	6*	0	1	1
LS	C*	1	1	0
GL	4*	0	1	0
RP (REC, PB, FF, REW, CUE, REVIEW, PAUSE)	A*	1	0	1
READY (STOP)	2*	0	0	1

*: 0 to F

11. Mechanism Control Micro Processor Input/Output Signal Level Check

Page 2	Address E2

Bit	Signal	Pin No.	I/O	Level
5	JACK MONO	7	I	"1"=H "0"=L
6	PB 1.7M DET	6	I	
7	$\overline{\text{MIC MONO}}$	5	I	

Page 2	Address E3

Bit	Signal	Pin No.	I/O	Level
0	$\overline{\text{EDIT}}$	28	O	"1"=H "0"=L
1	SP/$\overline{\text{LP}}$	27	O	
2	CAM/$\overline{\text{LINE}}$	26	O	
3	Hi8/$\overline{\text{NORMAL}}$	25	O	
4	MX ON/$\overline{\text{OFF}}$	24	O	
5	MX SEL 2	23	O	
6	MX SEL 1	22	O	
7	LINE MIX	21	O	

Page 2	Address E4

Bit	Signal	Pin No.	I/O	Level
0	$\overline{\text{S JACK IN}}$	76	I	"1"=H "0"=L
1	CFG HMS	75	I	
4	VA PB MODE	72	O	
5	TAPE LED ON	71	O	
6	ME/$\overline{\text{MP}}$	70	O	
7	DS ON	69	O	

Page 2	Address E5

Bit	Signal	Pin No.	I/O	Level
0	$\overline{\text{DEW DET}}$	56	I	"1"=H "0"=L
1	TAPE TOP	55	I	
2	TAPE END	54	I	
4	FULL MUTE	49	O	
6	AUDIO MUTE	47	O	
7	MONO REC	46	O	

Page 2	Address E7

Bit	Signal	Pin No.	I/O	Level
0	$\overline{\text{REEL HALL CONT}}$	36	O	"1"=H "0"=L
3	DRUM FWD/$\overline{\text{RVS}}$	33	O	
4	DRUM ON	32	O	
5	LM LIM CONT	31	O	
6	LOAD	30	O	
7	UNLOAD	29	O	

Page 2	Address E8

Bit	Signal	Pin No.	I/O	Level
2	CLOG DET	82	I	"1"=H "0"=L
5	$\overline{\text{LM LIM ON}}$	79	I	

Page 2	Address E9

Bit	Signal	Pin No.	I/O	Level
0	VIDEO MUTE	20	O	"1"=H "0"=L
1	E/$\overline{\text{L}}$ DET	19	I	
2	ME/$\overline{\text{MP}}$ SW	18	I	
3	REC PROOF SW	17	I	
5	MODE SW A	15	I	
6	MODE SW B	14	I	
7	MODE SW C	13	I	

Note: Refer to "Mode switch check".

12. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14

Checking method:

1) Set data: 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the data in the following table to page: 4, address: 13, and select the A/D port to be displayed.

Data	A/D Port
00	Pin (62): AN0 (T REEL FG)
01	Pin (61): AN1 (S REEL FG)
02	Pin (60): AN2 (ATF ERROR)
03	Pin (59): AN3 (BATT SENS)
04	Pin (58): AN4 ($\overline{\text{DEW}}$)

3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

13. Tape Top/End Sensor Condition Check

Page 4	Address 0A

Checking method:

1) Set data: 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape top
1 0	Tape end
1 1	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non-active (Not receiving light)
"1"=Active (Receiving light)

14. Battery Voltage Check

Page 4	Address 10

Adjusting Remote Control Unit Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4Vdc
E0	Approx. 8.8Vdc
D0	Approx. 8.2Vdc
C0	Approx. 7.5Vdc
B0	Approx. 6.9Vdc
A0	Approx. 6.3Vdc
90	Approx. 5.6Vdc
80	Approx. 5.0Vdc

15. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.
5) After checking the operations, turn off the main power (6.3 Vdc).

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

16. Mode control micro processor key matrix check

The key input can be checked.

Page 1	Address 68~6D

	Bit7	Bit6 (K IN 6)	Bit5 (K IN 5)	Bit4 (K IN 4)	Bit3 (K IN 3)	Bit2 (K IN 2)	Bit1 (K IN 1)	Bit0 (K IN 0)
Address 68 (K OUT 0)		LENS COVER OPEN	VTR POWER (CF-3200 S1)		PAUSE (CF-3200 S3)	REC (CF-3200 S6)	EJECT (CF-3200 S16)	HiFi SOUND 1 (CF-3200 S12)
Address 69 (K OUT 1)			CAMERA POWER (CF-3200 S1)	FF (CF-3200 S2)	PLAY (CF-3200 S4)	REW (CF-3200 S7)	STOP (CF-3200 S9)	HiFi SOUND 2 (CF-3200 S12)
Address 6A (K OUT 2)		PUSH FOCUS FIX (CF-3200 S30)	DIGITAL PICTURE (CF-3200 S31)	ZERO MEMORY (CF-3200 S21)	EDIT SEARCH (+) (CF-3200 S5)	EDIT SEARCH (–) (CF-3200 S8)	COUNTER RESET (CF-3200 S28)	EDIT ON/OFF SP/LP (CF-3200 S13)
Address 6B (K OUT 3)		AUTO LOCK (CF-3200 S19)	PROGRAM AE (CF-3200 S20)		TIME (CF-3200 S23)	DATE (CF-3200 S26)		
Address 6C (K OUT 4)		EXPOSURE (+) (LC-40P S507)		AUTO FOCUS ON/OFF (CF-3200 S22)	SUPER IMPOSE COLOR/MODE (CF-3200 S24)	SUPER IMPOSE MEMORY (CF-3200 S27)	SUPER IMPOSE ON/OFF (CF-3200 S29)	OUT/IN (JK-3100 S921)
Address 6D (K OUT 5)		EXPOSURE (–) (LC-40P S507)	AREA (CF-3200 S10)	SUMMER TIME (CF-3200 S11)	EXPOSURE ON/OFF (CF-3200 S25)	FADER (MF-175P S997)	START/ STOP (CF-3200 S17)	REMOTE COMMANDER (CF-3200 S14)

"1"=key switch ON
"0"=key switch OFF

17. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E

Wireless remote control unit key pressed	**Data**
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19
SLOW	23

18. REC MODE/EDIT Switch, Remote Commander Switch Check

Page 1	Address 0A

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
REC MODE (SP/LP)	REMOTE COMMANDER		EDIT				

"1"=OFF
"0"=ON

"1"=EDIT ON
"0"=EDIT OFF

"1"=LP
"0"=SP

19. HIFI Sound Switch, IN/OUT Switch Check

Page 1	Address 0B

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		HiFi SOUND		IN/OUT			

Switch Position		
1	0	1
2	1	0
GREEN MARK	0	0

"1"=IN
"0"=OUT

20. White Balance Mode and Focus Mode Display/Switchover

Page 1	Address 9A

The mode can be switched when the data of page: 1, address: A3 is set to 04.

Data	White Balance Mode
*1	INDOOR
*2	OUTDOOR
*3	HOLD
*6	AUTO

Data	Focus Mode
0*	Manual
1*	Automatic

21. LCD, LED Check, etc.

Page 1	Address A3

Data	Mode
00	Normal
01	Key input prohibited
02	All segments of LCD, LED light up
04	Camera function renewal prohibited

22. Page D Address List

Note 1: The adjustment data initial value is the data to be input before performing video section adjustment (page D), when the page D data has been erased due to some cause.

Note 2: The data listed in the adjustment data memo column are the fixed data.
Check that these data have not been accidentally rewritten, after completing adjustments.

*1 No mark : AEP, UK model
[ ] : E, Australian, Tourist model

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	Category code	Not used	01	01
01	Test mode		00	00
02	Destination flag		82[A3]*1	82[A3]*1
03	BATT END	Battery end adjustment	8C	
04	SW POSITION	SW POSITION adjustment	00	
05	SW POSITION	SW POSITION adjustment	80	
06	EMERGENCY code (FIRST)	Error code and mode are memorized. Rewrite the data of these addresses to 00 after repairs/adjustments	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP NORMAL SP)	CXA1207 serial data	3C	3C
0B	SR DATA (MP NORMAL LP)	CXA1207 serial data	3C	3C
0C	SR DATA (ME Hi8 SP)	CXA1207 serial data	28	28
0D	SR DATA (ME Hi8 LP)	CXA1207 serial data	28	28
0E	SR DATA (ME NORMAL SP)	CXA1207 serial data	28	28
0F	SR DATA (ME NORMAL LP)	CXA1207 serial data	28	28
10	SR DATA (MP Hi8 SP)	CXA1207 serial data	3C	3C
11	SR DATA (MP Hi8 LP)	CXA1207 serial data	3C	3C
12	SR DATA (EDIT ON NORMAL)	CXA1207 serial data	28	28
13	SR DATA (EDIT ON Hi8)	CXA1207 serial data	28	28
14	CAM TITLE BLU R-Y	Camera titler color adjustment [Blue]	74	
15	CAM TITLE BLU B-Y	Camera titler color adjustment [Blue]	DA	
16	CAM TITLE GRN R-Y	Camera titler color adjustment [Green]	3E	
17	CAM TITLE GRN B-Y	Camera titler color adjustment [Green]	2C	
18	CAM TITLE CYN R-Y	Camera titler color adjustment [Light blue]	32	
19	CAM TITLE CYN B-Y	Camera titler color adjustment [Light blue]	86	
1A	CAM TITLE RED R-Y	Camera titler color adjustment [Red]	DE	
1B	CAM TITLE RED B-Y	Camera titler color adjustment [Red]	7A	
1C	CAM TITLE VIO R-Y	Camera titler color adjustment [Violet]	A0	
1D	CAM TITLE VIO B-Y	Camera titler color adjustment [Violet]	A6	
1E	CAM TITLE YEL R-Y	Camera titler color adjustment [Yellow]	8C	
1F	CAM TITLE YEL B-Y	Camera titler color adjustment [Yellow]	26	
20	Permission plug		20	20
21	Adjustment plug	FORCED VTR ON, CAM ON etc DATA / MODE 01 / FORCED CAMERA POWER ON 02 / FORCED VTR POWER ON	00	00
22~2C		Not used		

Table 9-3 (1).

Address	**Name**	**Function** **[ ] Indicate the adjustment voltage output terminal**	**Adjustment data**	
			Initial value	**Memo column**
2D	BATT REMAIN LEVEL 1	Amount of remaining battery 1	A0	
2E	BATT REMAIN LEVEL 2	Amount of remaining battery 2	99	
2F	BATT REMAIN LEVEL 3	Amount of remaining battery 3	94	
30	1A-ch REC C LEVEL (ME)	ME REC C level adjustment [IC156 ⑥]	B5	
31	1A-ch REC C LEVEL (MP)	MP REC C level adjustment [IC156 ⑥]	B5	
32	1B-ch REC C LEVEL (ME)	Not used	B5	B5
33	1B-ch REC C LEVEL (MP)	Not used	B5	B5
34	2A-ch REC C LEVEL (ME)	Not used	B5	B5
35	2A-ch REC C LEVEL (MP)	Not used	B5	B5
36	2B-ch REC C LEVEL (ME)	Not used	B5	B5
37	2B-ch REC C LEVEL (MP)	Not used	B5	B5
38	CAP FG BIAS	Capstan FG bias adjustment [IC158 ②]	80	
39~3D		Not used		
3E	2A-ch M.T Hi8		90	90
3F	2A-ch M.T NORMAL	2A ch playback frequency characteristic adjustment [IC158 ⑱]	90	
40	2B-ch M.T Hi8		90	90
41	2B-ch M.T NORMAL	2B ch playback frequency characteristic adjustment [IC158 ⑲]	90	
42	1A-ch M.T Hi8		90	90
43	1A-ch M.T NORMAL	1A ch playback frequency characteristic adjustment [IC158 ⑫]	90	
44	1B-ch M.T Hi8		90	90
45	1B-ch M.T NORMAL	1B ch playback frequency characteristic adjustment [IC158 ⑬]	90	
46	REC C RF (EE)	Not used		
47	REC C RF (PB)	Not used		
48	RF CONT (ME)	Not used		
49	RF CONT (MP)	Not used		
4A	EE LEVEL	EE level adjustment [IC156 ⑱]	67	
4B		Not used		
4C	COMB ADJ	Chroma comb filter adjustment [IC156 ⑬]	AB	
4D	SR-IR	IR adjustment [IC156 ④]	AB	
4E	Y-FM CARRIER (Hi8)	Y-FM carrier frequency [IC156 ③]	AB	AB
4F	Y-FM CARRIER (NORMAL)	Y-FM carrier frequency adjustment [IC156 ③]	AB	
50	Y-FM DEVIATION (Hi8)	Y-FM deviation [IC156 ②]	96	96
51	Y-FM DEVIATION (NORMAL)	Y-FM deviation adjustment [IC156 ②]	96	
52	REC Y LEVEL (EE Hi8 ME)		7A	7A
53	REC Y LEVEL (EE Hi8 MP)		7A	7A
54	REC Y LEVEL (EE NOR ME)	REC Y recording current adjustment (ME) [IC158 ⑨]	7A	
55	REC Y LEVEL (EE NOR MP)	REC Y recording current adjustment (MP) [IC158 ⑨]	7A	
56	REC Y LEVEL (PB)	Playback REC Y level	7A	7A
57	PB Y LEVEL (EE)	EE PB Y level [IC156 ⑤]	8B	8B
58	PB Y LEVEL (Hi8)	Hi8 PB Y level adjustment [IC156 ⑤]	8F	
59	PB Y LEVEL (NORMAL)	Normal PB Y level adjustment [IC156 ⑤]	8B	

Table 9-3 (2)

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
5A	EMPHASIS INPUT LEVEL	EE emphasis input level adjustment [IC156 ⑲]	9C	
5B	PB LINE LEVEL	Playback emphasis input level adjustment [IC156 ⑲]	AF	
5C~77		Not used		
78	L/R MX LEVEL (REC)	REC matrix adjustment [IC158 ③]	B0	
79	L/R MX LEVEL (PB)	PB matrix adjustment [IC158 ③]	A0	
7A	1.5 IR	1.5 MHz IR adjustment [IC158 ⑤]	90	
7B	1.5 DEV	1.5 MHz deviation adjustment [IC158 ④]	B0	
7C	1.7 IR	1.7 MHz IR adjustment [IC158 ⑦]	90	
7D	1.7 DEV	1.7 MHz Deviation adjustment [IC158 ⑥]	A0	
7E	AUDIO FADER	Not used		
7F~FF		Not used		

Table 9-3 (3)

9-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Check (DD-47P Board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q906 collector
Measuring Instrument	Frequency counter
Specified Value	510 ± 35 kHz

Adjusting method:

1) Check that the oscillator frequency satisfies the specified value.

2. Power Voltage Check (DD-47P Board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVF 5V check	
Measurement Point	Pin ⑮ of W401
Specified Value	4.95 ± 0.1 Vdc
D5V check	
Measurement Point	Pins ⑦ and ⑧ of W401
Specified Value	4.91 ± 0.1 Vdc
D4V check	
Measurement Point	Pin ④ of W401
Specified Value	4.06 ± 0.1 Vdc
VID 5V check	
Measurement Point	Pins ㉑ and ㉒ of W401
Specified Value	4.93 ± 0.1 Vdc
RP 5V check	
Measurement Point	Pin ㉔ of W401
Specified Value	4.94 ± 0.1 Vdc
AU5V check	
Measurement Point	Pin ㉓ of W401
Specified Value	4.93 ± 0.1 Vdc
CAM5V check	
Measurement Point	Pins ⑨ and ⑩ of W401
Specified Value	4.89 ± 0.15 Vdc
CAM15V check	
Measurement Point	Pin ⑫ of W401
Specified Value	15.09 ± 0.3 Vdc
CAM -9V check	
Measurement Point	Pin ⑪ of W401
Specified Value	-8.8 ± 0.7 Vdc
MOTOR 5V check	
Measurement Point	Pin ⑭ of W401
Specified Value	4.92 ± 0.1 Vdc

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "9-1-9. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 7D

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	E-E
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END) 2D (BATT REMAIN LEVEL 1) 2E (BATT REMAIN LEVEL 2) 2F (BATT REMAIN LEVEL 3)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-5.

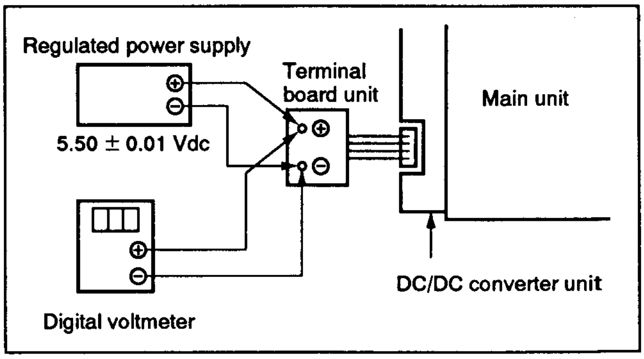


Fig. 9-5.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01.
   (Test mode 1 setting)
4) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
5) Select page: 4, address: 10, read the adjusting remote control unit display data, and set to DEND.
6) Set data DEND to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
7) Convert DEND to decimal to obtain DEND′. (Refer to Table 7-6. "Hexadecimal notation − decimal notation conversion table")
8) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D D2D′=DEND′+20
   Address: 2E D2E′=DEND′+13
   Address: 2F D2F′=DEND′+8
   Note: After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
9) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Test mode 1 release)
10) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection
1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 9-5.

Checking method:
Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.65 ± 0.01 Vdc.
4) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.53 ± 0.01 Vdc.
6) Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.47 ± 0.01 Vdc.
8) Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

9-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-93P Board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ⑨ of CN002 (RF SWP) CH2: Pin ⑫ of CN002 (PB RF CH2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) 05 (SW POSITION)
Specified Value	$t_1=0 \pm 10\ \mu$sec

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t_1". (Coarse adjustment)
4) Press the PAUSE button of the remote control unit.
5) Change the data of page: D, address: 04, and adjust so that the switching position (t_1) becomes the specified value. (Fine adjustment)
6) Press the PAUSE button of the adjusting remote control unit.

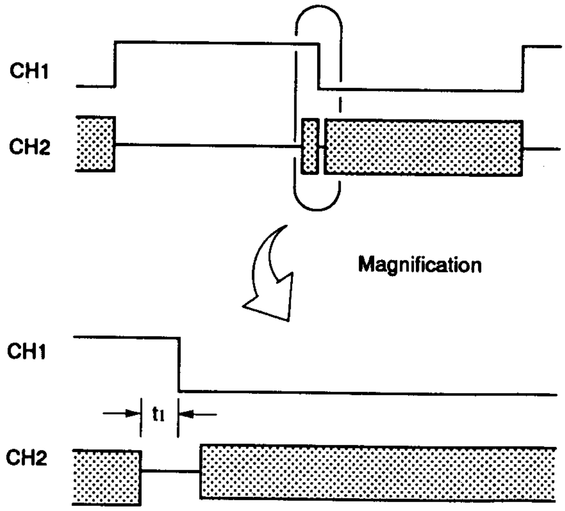


Fig. 9-6.

2. CAP FG Duty Adjustment (VS-93P Board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ④ of CN002 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38 (CAP FG BIAS)
Specified Value	Duty=50 ± 1%

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 38.
3) Change the data of page: D, address: 38, and adjust the duty of the CFG waveform to the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

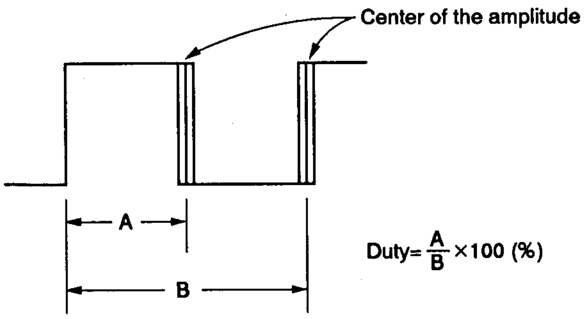


Fig. 9-7.

9-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Fig. 9-3.

[Adjusting procedure]

1) Playback frequency characteristic adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) EE level adjustment
5) IR adjustment
6) Y/C separation adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis fo adjustment
13) REC Y level adjustment
14) REC C level adjustment
15) REC ATF level check
16) REC AFM level check

1. Playback Frequency Characteristic Adjustment (VS-93P Board)

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment • AEP, UK model WR5-7CE • E, Australian, Tourist model WR5-6C
Measurement Point	Refer to Fig. 9-8
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	43 (1a-ch M.T), 45 (1b-ch M.T), 3F (2a-ch M.T), 41 (2b-ch M.T)
Specified Value	• AEP, UK model 4.5 MHz level: 8.5 MHz level= 6: (3.6 ± 0.4) • E, Australian model 3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.3)

Note: [ ] indicates the measuring frequency for WR5-6C.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of each address of page D, and adjust the level ratio of 4.5 MHz [3.58 MHz] and 8.5 MHz [5.5 MHz] of each PB RF output waveform of 1a, 1b, 2a, 2b to the specified value.
   Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.

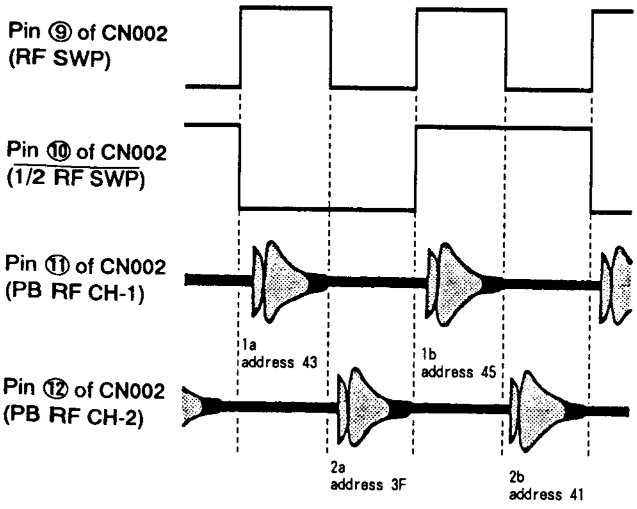

Pin ⑨ of CN002
(RF SWP)
Pin ⑩ of CN002
(1/2 RF SWP)
Pin ⑪ of CN002
(PB RF CH-1)
1a
address 43
1b
address 45
Pin ⑫ of CN002
(PB RF CH-2)
2a
address 3F
2b
address 41

Fig. 9-8.

- WR5-7CE (for AEP, UK model)

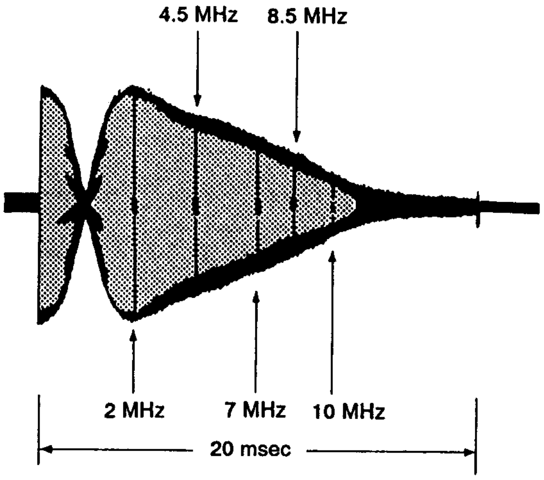


Fig. 9-9.

- WR5-6C (for E, Australian model)

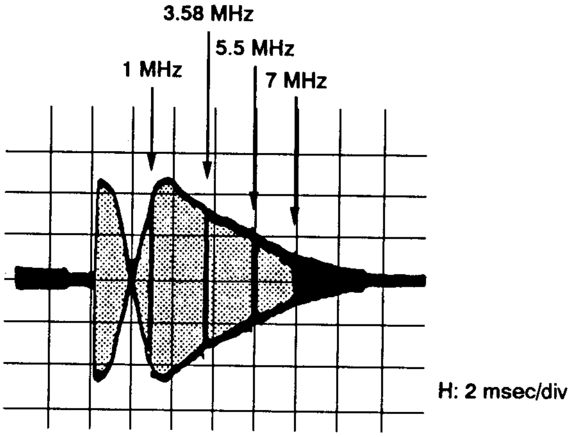


Fig. 9-10.

2. Flying Erase Check (VS-93P Board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑮ of CN001 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Above 7.0 MHz Voltage: Above 7.0 Vp-p

Note: Use a MP type tape.

Checking method:

1) Check that the oscillation frequency is above 7.0 MHz and that the oscillation voltage is above 7.0 Vp-p.

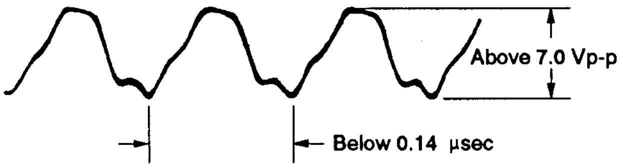


Fig. 9-11.

3. VXO Oscillation Frequency Check (VS-93P Board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑫ of IC152
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 70 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC152 is 4433618 ± 70 Hz.

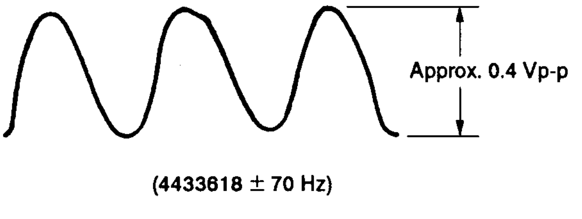


Fig. 9-12.

4. EE Level Adjustment (VS-93P Board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑤ of CN101 (VIDEO OUT)^{Note}
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (EE LEVEL)
Specified Value	A=1.00 ± 0.025V

Note: Terminate pin ⑤ of CN101 at 75 Ω .
After completing adjustments, remove the 75 Ω resistor.

Adjusting method:

1) Release the protect.
Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

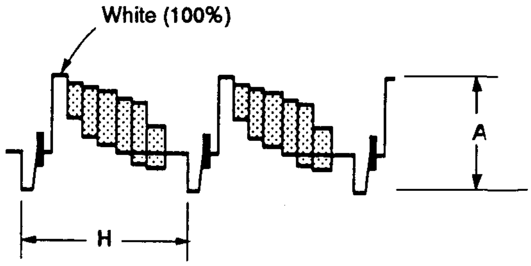


Fig. 9-13.

5. IR Adjustment (VS-93P Board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑦ of IC151 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 50 mVp-p)

Connection

1) Connect pin (64) of IC151 (VG2: 2.5 Vdc) to pin (51) of IC151 with a jumper wire.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
3) Press the PAUSE button of the adjusting remote control unit.

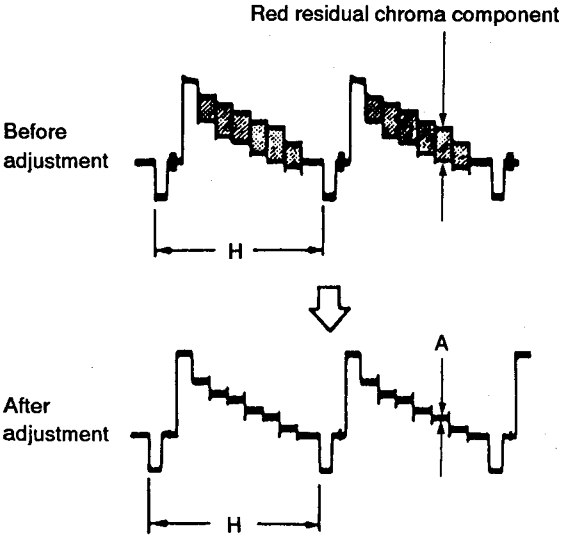

Red residual chroma component
Before adjustment
H
A
After adjustment
H

Fig. 9-14.

6. Y/C Separation Adjustment (VS-93P Board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑪ of IC151 (C+CD)
Measuring Instrument	Oscilloscope
Adjusting Element	RV151 (Phase)
Adjustment Page	D
Adjustment Address	4C (COMB ADJ)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
3) Adjust RV151 so that the residual chroma component (A) becomes minimum.
4) Repeat 2) to 3).
5) Press the PAUSE button of the adjusting remote control unit.

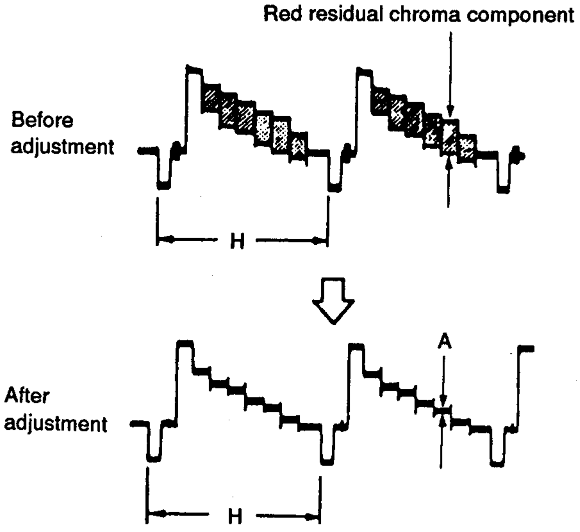

Red residual chroma component
Before adjustment
H
A
After adjustment
H

Fig. 9-15.

7. Emphasis Input Level Adjustment (VS-93P Board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ③ of IC151 (or Pin ⑤ of IC155)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPHASIS INPUT LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

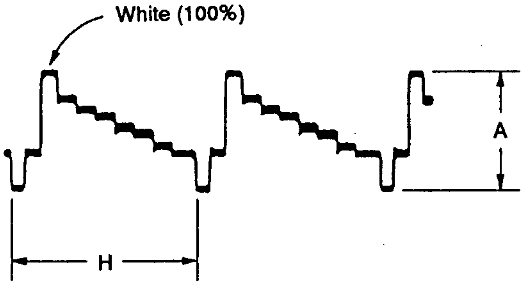


Fig. 9-16.

8. PB Y Level Adjustment (VS-93P Board)

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section • Normal mode WR5-5CSP • Hi8 mode WR5-8CSE
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (NORMAL PB Y LEVEL) • Hi8 mode 58 (HI8 PB Y LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8CSE).
6) Change the data of page: D, address: 58, and adjust so that the Y signal level (A) becames the specified value.
7) Press the PAUSE button of the adjusting remote control unit.

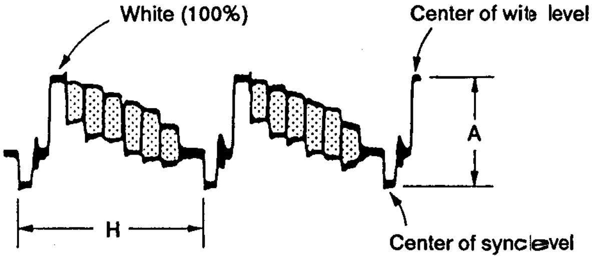


Fig. 9-17.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal (terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

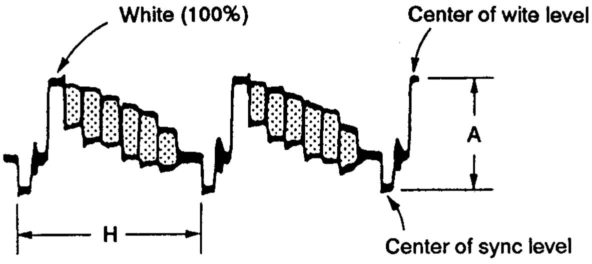


Fig. 9-18.

10. Y FM Carrier Frequency Adjustment (VS-93P Board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑤ of IC003 (REC Y RF OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (Y FM CARRIER)
Specified Value	4.40 ± 0.04 MHz

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Perform "Deviation Adjustment".

Pin ⑤ of IC003 waveform

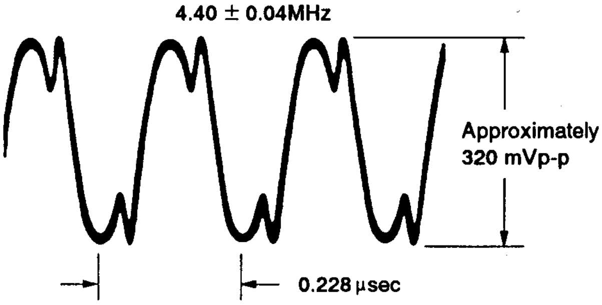


Fig. 9-19.

11. Deviation Adjustment (VS-93P Board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ㉑ of IC151
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (Y FM DEVIATION)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.025V
5) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote control unit.

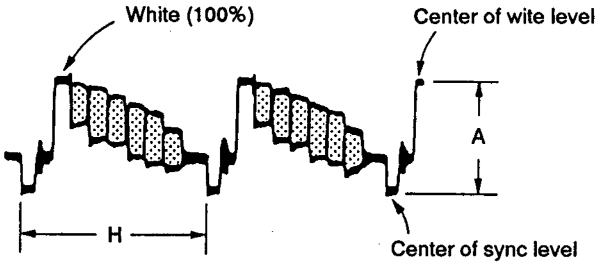


Fig. 9-20.

12. Chroma Emphasis fo Adjustment (VS-93P Board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ㉔ of IC152
Measuring Instrument	Oscilloscope
Adjustment Element	FL153
Specified Value	Minimum fo component

Connection:

1) Connect pin ㉔ of IC152 to GND with a 2.2 kΩ resistor (1-249-421-11).

Adjusting method

1) Adjust FL153 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

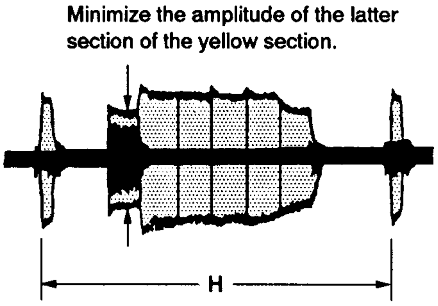

Minimize the amplitude of the latter section of the yellow section.
H

Fig. 9-21.

13. REC Y Level Adjustment (VS-93P Board)

Mode	Record (LP)
Signal	No signal
Measurement Point	Pin ⑤ of IC003
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	55 (REC Y LEVEL EE NOR MP) 54 (REC Y LEVEL EE NOR ME)
Specified Value	A=320 ± 5 mVp-p

Note: Use a MP type tape.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 55, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.
4) Set the data of page: D, address: 55 to page: D, address: 54.
5) Press the PAUSE button of the adjusting remote control unit.

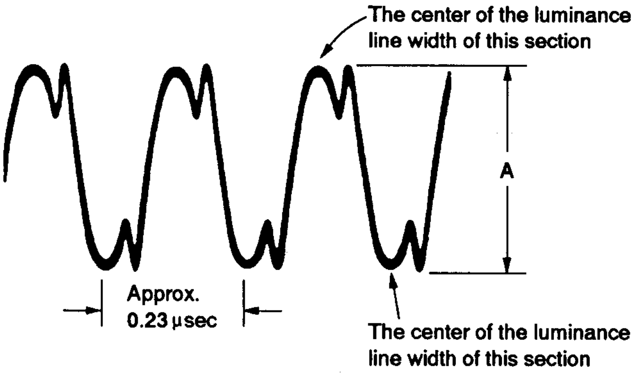

The center of the luminance line width of this section
A
Approx. 0.23 μsec
The center of the luminance line width of this section

Fig. 9-22.

14. REC C Level Adjustment (VS-93P Board)

Mode	Record (LP)
Signal	Color bar
Measurement Point	Pin ⑦ of CN002
Measuring Instrument	Oscilloscope (1:1 probe)
Adjustment Page	D
Adjustment Address	31 (MP REC C LEVEL) 30 (ME REC C LEVEL)
Specified Value	A=38 ± 1.5 mVp-p

Note: Use a MP type tape.

Connection:
1) Remove the AU-135P board CN601.
2) Connect the connecting point of R401 and R402 (the side of IC401 (83) pin) to GND with a jumper wire.

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Change the data of page: D, address: 31, and adjust so that the REC C level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
5) Set the same data of address: 31 to address: 30.
6) Press the PAUSE button of the adjusting remote control unit.
7) Turn the main power supply (6.3V) off.

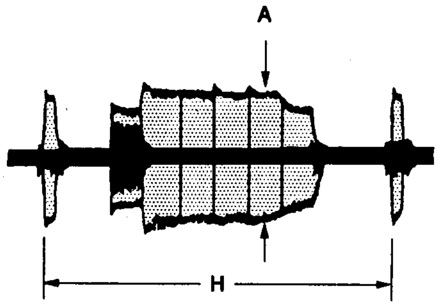


Fig. 9-23.

15. REC ATF Level Check (VS-93P Board)

Mode	Record (LP)
Signal	No signal
Measurement Point	Pin ⑦ of CN002 (REC 1A)
Measuring Instrument	Oscilloscope
Specified Value	A=11 ± 3 mVp-p

Note: Use a MP type tape.

Connection:

1) Remove the AU-135P board CN601.

Checking method:

1) Release the protect
   Page: 1, address: 00, data: 01.
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC ATF signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

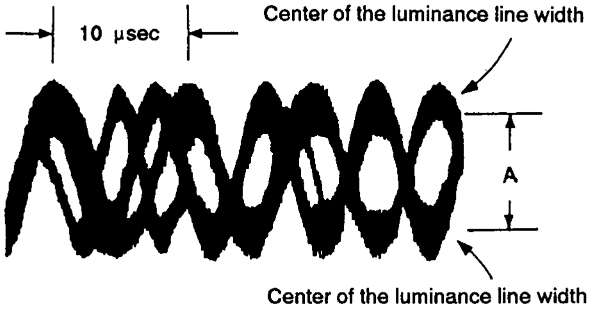

10 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 9-24.

16. REC AFM Level Check (VS-93P Board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN002 (REC 1A)
Measuring Instrument	Oscilloscope
Specified Value	A=13 ± 3 mVp-p

Note: 1) Use a MP type tape.
2) Do not insert anything into the audio input terminal (left).

Connection:

1) Connect the connecting point of R401 and R402 (the side of IC401 (83) pin) to GND with a jumper wire.

Checking method:

1) Release the protect
   Page: 1, address: 00, data: 01.
2) To reduce the REC Y signal, set data: 00 to page: D, address: 55.
   Note: Don't press the PAUSE button of the adjusting remote control unit.
3) Check that the REC AFM signal level (A) satisfies the specified value.
4) Turn the main power supply (6.3V) off.

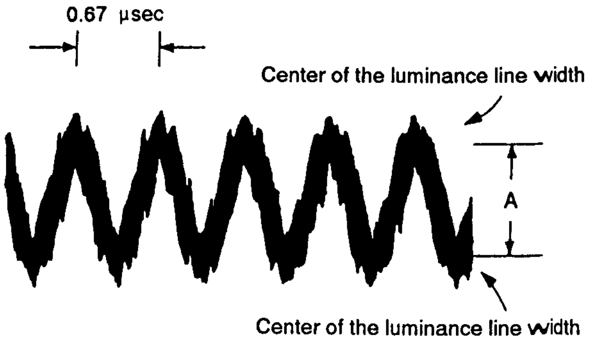

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 9-25.

9-6. AUDIO SYSTEM ADJUSTMENT

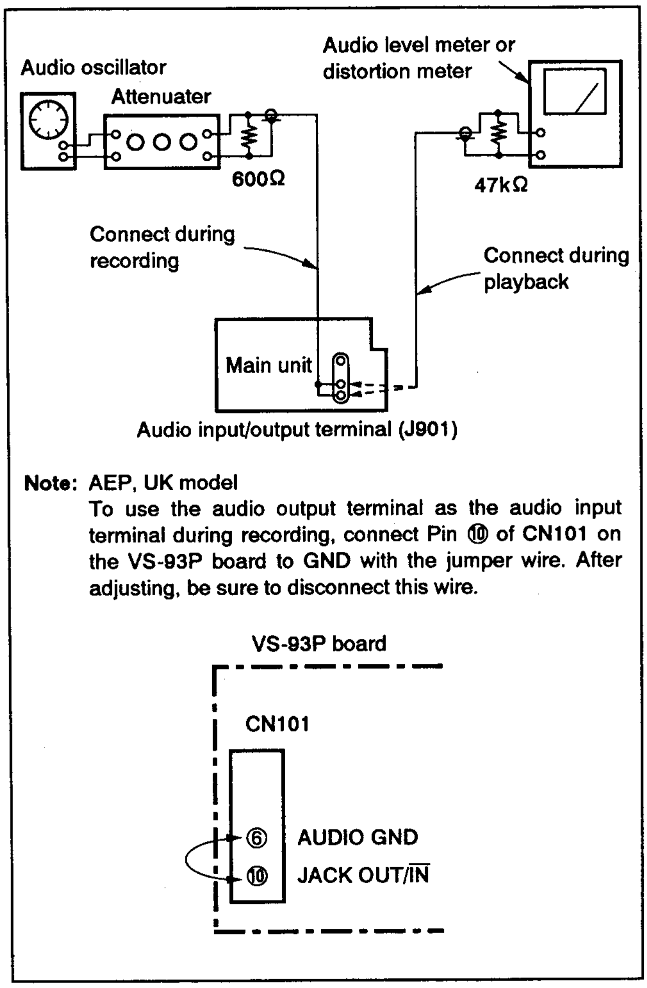
- Perform the adjustment using the color bar signal as a video signal input.

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown in Fig. 9-26, and perform adjustments with the power switch [video or player] position.
Switch the input/output switchover switch in accordance with the mode as follows in E, Australian, Tourist model.
- Input position·······Recording mode
- Output position·····Playback mode

Set the HIFI-SOUND switch (CF-3200 board S12) to the following position unless specified otherwise.
- Green (stereo) position

Use an extension cord if necessary.
- For AU-135P board (30P, 0.8 mm)
  Part code: J-6082-135-A

Note: 1) When inputting the audio signal, input the same signal to both L, and R channels, unless specified otherwise.
2) Be sure to insert the plug (shorting plug or dummy plug, etc.) into the audio input/output terminal (right). If the plug is not inserted, the unit will be set into the monaural mode, and correct adjustments cannot be carried out.
(Monaural mode)
During recording...REC AFM RF1.7 MHz carrier will not be output.
During playback...The L+R signal will be output from the audio input/output terminal (left).
3) The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.


Audio oscillator
Attenuater
600Ω
Audio level meter or distortion meter
47kΩ
Connect during recording
Connect during playback
Main unit
Audio input/output terminal (J901)
VS-93P board
CN101
⑥ AUDIO GND
⑩ JACK OUT/$\overline{IN}$

Note: AEP, UK model
To use the audio output terminal as the audio input terminal during recording, connect Pin ⑩ of CN101 on the VS-93P board to GND with the jumper wire. After adjusting, be sure to disconnect this wire.

Fig. 9-26.

[Adjustment Procedure]
1) IR adjustment
2) 1.5 MHz carrier frequency check
3) 1.7 MHz carrier frequency check
4) 1.5 MHz recording level check
5) 1.7 MHz recording level check
6) E-E output level check
7) REC matrix L–R check
8) REC matrix L+R check
9) 1.5 MHz deviation adjustment
10) 1.7 MHz deviation adjustment
11) PB matrix L adjustment
12) PB matrix R adjustment
13) Overall level characteristics, distortion check
14) Separation check
15) Overall noise level check

1. IR Adjustment (AU-135P Board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9CS)
Measurement Point	Pins ㊹ and ⑥ of IC601 (LCH IR) Pins ㊹ and ⑥ of IC602 (RCH IR)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	7A (1.5 IR), 7C (1.7 IR)
Specified Value	The DC voltage difference between pins ㊹ and ⑥ is 0 ± 10 mVdc

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01

- LCH IR adjustment

2) Connect the digital voltmeter to pin ㊹ of IC601, and read the voltage. (Approximately 2100 mVdc)
3) Connect the digital voltmeter to pin ⑥ of IC601.
4) Change the data of page: D, address: 7A, and adjust so that the voltage of pin ⑥ of IC601 becomes equal to the voltage of pin ㊹. (Voltage difference below 10 mVdc)
5) Press the PAUSE button of the adjusting remote control unit.

- RCH IR adjustment

6) Connect the digital voltmeter to pin ㊹ of IC602, and read the voltage. (Approximately 2100 mVdc)
7) Connect the digital voltmeter to pin ⑥ of IC602.
8) Change the data of page: D, address: 7C, and adjust so that the voltage of pin ⑥ of IC602 becomes equal to the voltage of pin ㊹. (Voltage difference below 10 mVdc)
9) Press the PAUSE button of the adjusting remote control unit.

2. 1.5 MHz Carrier Frequency Check (AU-135P Board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC601
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:

1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

3. 1.7 MHz Carrier Frequency Check (AU-135P Board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑧ of IC602
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.700 ± 0.002 MHz

Note: 1) Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.
2) Insert a shorting plug into the audio input terminal (right).

Checking method:

1) Check that the 1.7 MHz carrier frequency satisfies the specified value.

4. 1.5 MHz Record Level Check (AU-135P Board)

Mode	Record (Monaural)
Signal	No signal
Measurement Point	Pin ② of CN601 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=41 ± 5 mVp-p

Note: Do not insert the plug into the audio input terminal (right).

Checking method:

1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

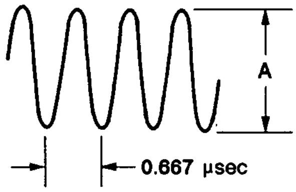


Fig. 9-27.

5. 1.7 MHz Record Level Check (AU-135P Board)

Mode	Record
Signal	No signal
Measurement Point	Pin ② of CN601 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	$\frac{\text{1.7 MHz carrier level}}{\text{1.5 MHz carrier level}} = 0.80 \pm 0.12$

Note: Insert a shorting plug into the audio input terminal (right).

Connection:
1) Remove and check C690 (0.01 µF). After checking, connect a new capacitor.

Checking method:
1) Check that the level ratio of 1.5 MHz carrier and 1.7 MHz carrier satisfies the specified value.

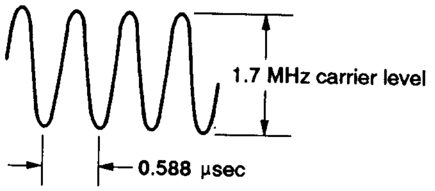


Fig. 9-28.

6. E-E Output Level Check (AU-135P Board)

Mode	Record
Signal	400 Hz, –7.5 dBs audio input terminal right [left]
Measurement Point	Pin ⑨ of IC604 [Pin ① of IC604]
Measuring Instrument	Oscilloscope
Specified Value	925^{+240}_{-190} mVp-p (–7.5 ± 2 dBs)

Checking method:
1) Check that the 400 Hz signal level satisfies the specified value.

7. REC Matrix L-R Adjustment (AU-135P Board)

Mode	Record
Signal	400 Hz, –7.5 dBs Input to both left and right terminals of the audio input terminal
Measurement Point	Pin ③ of IC603
Measuring Instrument	Oscilloscope (Use 1:1 probe)
Adjustment Page	D
Adjustment Address	78 (L/R MX LEVEL (REC))
Specified Value	0 ± 5 mVp-p

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 78, and minimize the 400 Hz signal level.
3) Press the PAUSE button of the adjusting remote control unit.

8. REC Matrix L+R Check (AU-135P Board)

Mode	Record
Signal	1. 400 Hz, –7.5 dBs: Audio input terminal left No signal: Audio input terminal right 2. No signal: Audio input terminal left 400 Hz, –7.5 dBs: Audio input terminal right
Measurement Point	Pin ㉕ of IC603
Measuring Instrument	Oscilloscope
Specified Value	The level difference is 0 ± 10 mVp-p when only the left terminal is input and when only the right terminal is input.

Note: When measuring the signal level of pin ㉕ of IC603, wait for more than 1 minute after signal input before measuring. (To stabilize the AGC)

Adjusting method:
1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Read the 400 Hz signal level of pin ㉕ of IC603, and take it down. (Approximately 200 mVp-p)
3) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
4) Check that the 400 Hz signal level of pin ㉕ of IC603 is (the value that was taken down at step 2) ± 10 mVp-p.

9. 1.5 MHz Deviation Adjustment (AU-135P Board)

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal left or right (Pin ⑨ or ① of IC604)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	−7.5 ± 0.5 dBs

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

10. 1.7 MHz Deviation Adjustment (AU-135P Board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9CS) Bilingual (Monoscope) section
Measurement Point	1. Pin ⑨ of IC604 2. Pin ① of IC604
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7D (1.7 DEV)
Specified Value	8 ± 0.05 graduation

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Connect the oscilloscope to pin ⑨ of IC604.
3) Adjust the 400 Hz signal amplitude to the 8.0 graduation using the VOLT/DIV knob of the oscilloscope.
4) Connect the oscilloscope to pin ① of IC604.
5) Change the data of page: D, address: 7D, and adjust so that the 1 kHz signal level becomes 8 ± 0.05 graduation. (Adjust with the center of the luminance line width.)
6) Press the PAUSE button of the adjusting remote control unit.

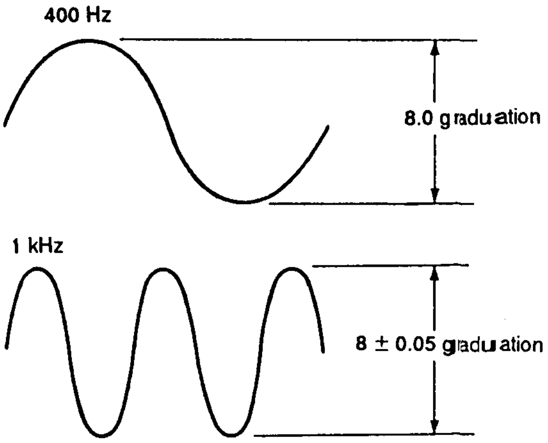


Fig. 9-29.

11. PB Matrix L Adjustment (AU-135P Board)

Mode	Self recording/playback
Signal	No signal: Audio input terminal (left) 400 Hz, –7.5 dBs: Audio input terminal (right)
Measurement Point	Pin ⑨ of IC604
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	79 (L/R MX LEVEL (PB))
Specified Value	Below 20 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
3) Record.
4) Remove the input signal.
5) Playback the recorded section.
6) Change the data of page: D, address: 79, and minimize the cross talk component (400 Hz).
7) Press the PAUSE button of the adjusting remote control unit.

12. PB Matrix R Check (AU-135P Board)

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) No signal: Audio input terminal (right)
Measurement Point	Pin ① of IC604
Measuring Instrument	Oscilloscope
Specified Value	Below 30 mVp-p

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Record.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk component (400 Hz) is below 30 mVp-p.

13. Overall Level Characteristic, Distortion Check (AU-135P Board)

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right] (Pin ⑨ [Pin ①] of IC604)
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –8.5 ± 2 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [ ] indicates the measuring point during the right channel check
2) Value when the following filter is used

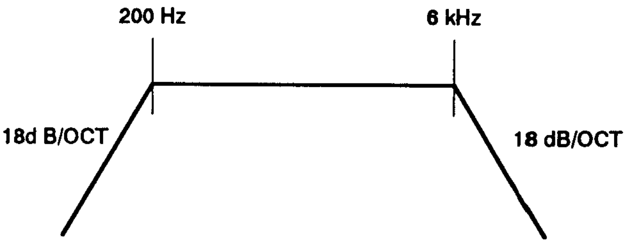


Fig. 9-30.

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].
   Note: Be sure to insert the shorting plug to the terminal that was not signal input.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output (left) [right] is –8.5 ± 2 dBs, and that the distortion rate is below 0.8% (Note 2).

14. Separation Check (AU-135P Board)

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 1 kHz, –7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right] (Pin ⑨ [Pin ①] of IC604)
Measuring Instrument	Audio level meter (Use an IHF-A curve audio correction filter)
Specified Value	Below –27.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

Checking method:
1) Insert a shorting plug into the audio input terminal (left) [right], and input a 1kHz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk level (1 kHz) of the audio output terminal (left) [right] is below –27.5 dBs.

15. Overall Noise Level Check (AU-135P Board)

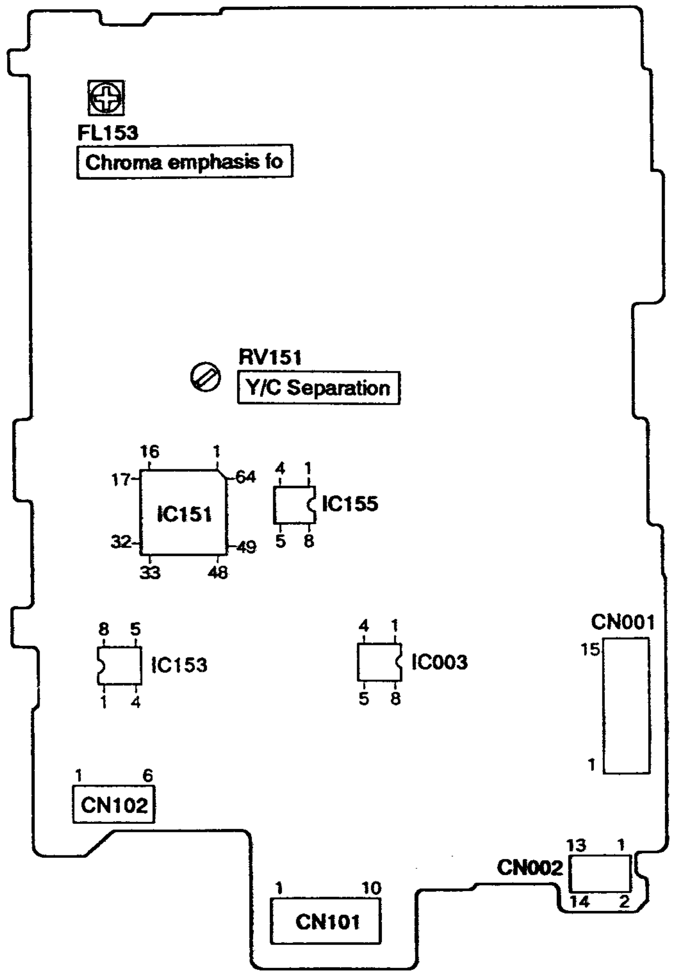
Mode	Self recording/playback
Signal	No signal: Audio input terminal left and right
Measurement Point	Audio output terminal (left) [right] (Pin ⑨ [Pin ①] of IC604)
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –62.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

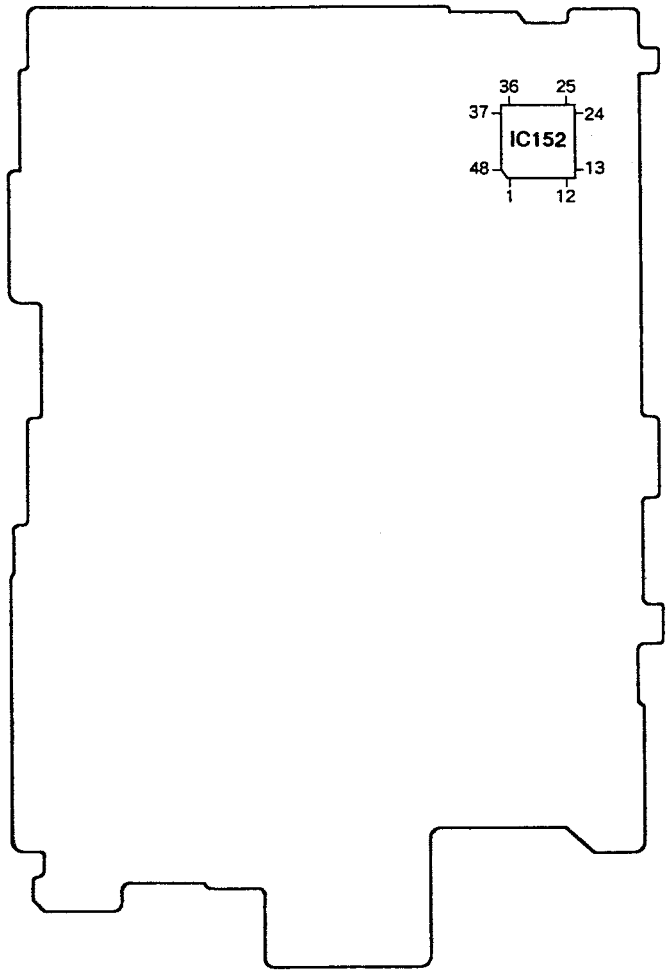
Checking method:
1) Insert the shorting plug to both left and right of the audio input terminals.
2) Record.
3) Remove the shorting plug.
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal (left) [right] is below –62.5 dBs.

9-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

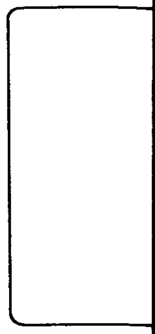
VS-93P BOARD (COMPONENT SIDE)


FL153
Chroma emphasis fo
RV151
Y/C Separation
IC151
16
1
17
64
32
49
33
48
IC155
4
1
5
8
IC153
8
5
1
4
IC003
4
1
5
8
CN001
15
1
CN102
1
6
CN101
1
10
CN002
13
1
14
2

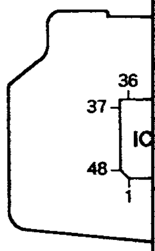
VS-93P BOARD (CONDUCTOR SIDE)


IC152
36
25
37
24
48
13
1
12

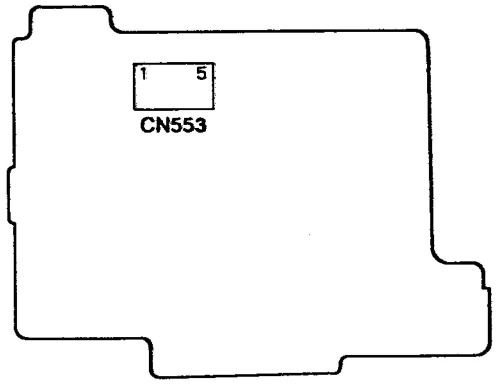
DD-47P BO



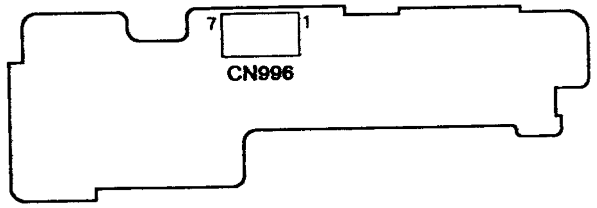
AU-135P B



MA-143P BOARD (COMPONENT SIDE)

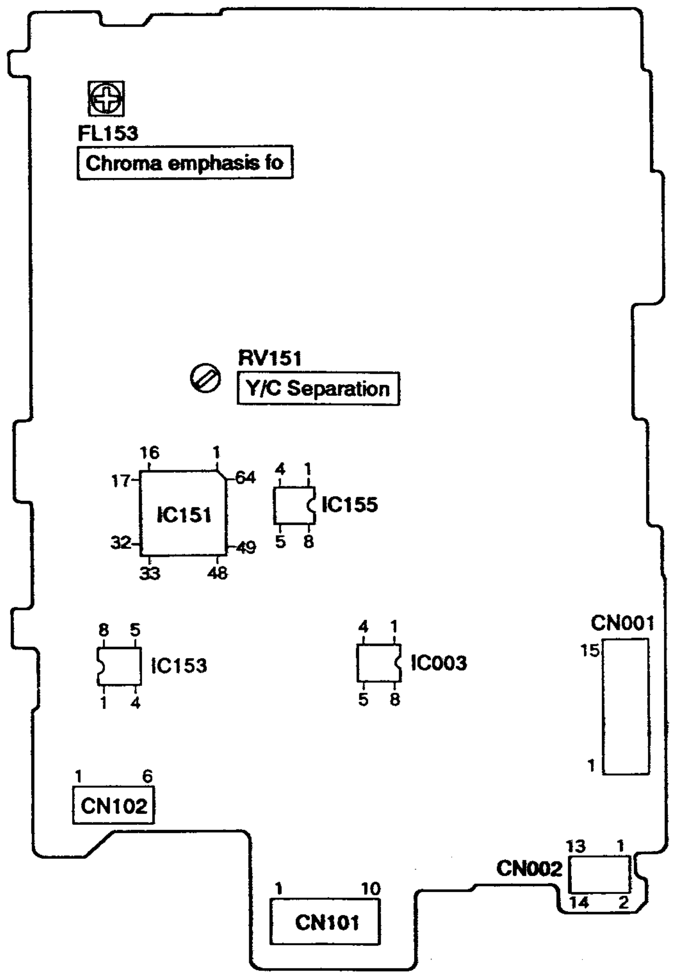


MF-175P BOARD (CONDUCTOR SIDE)

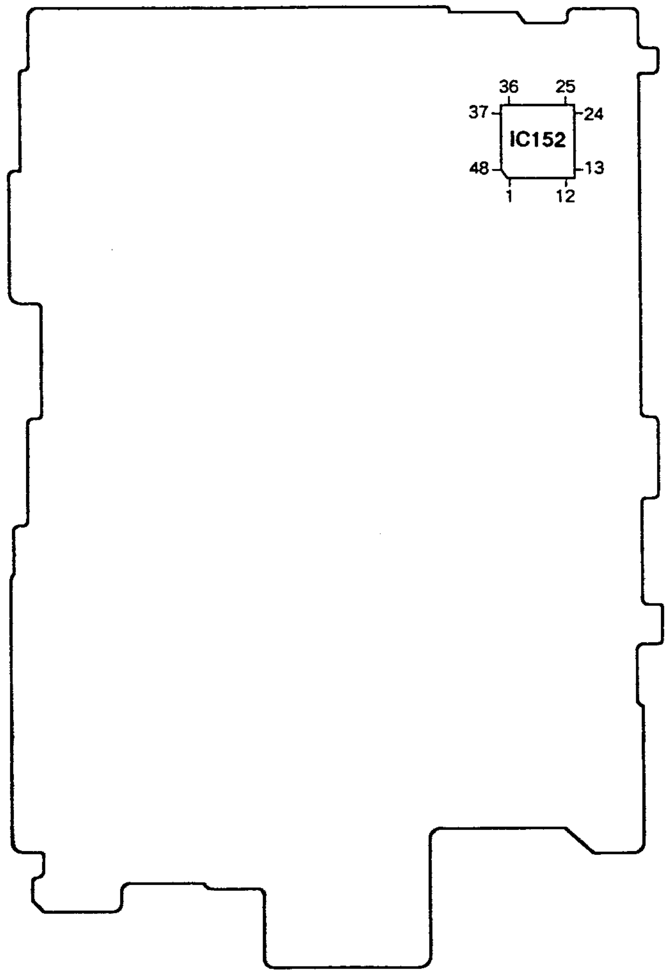


9-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

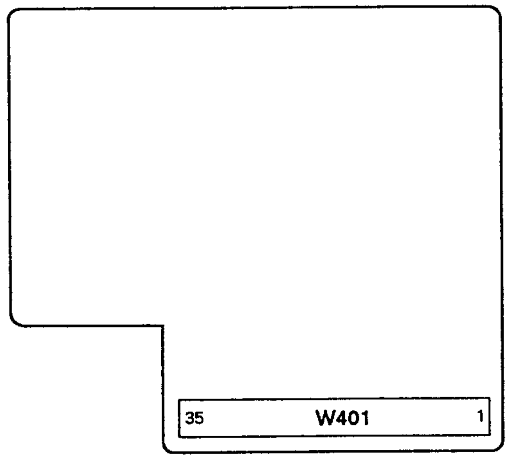
VS-93P BOARD (COMPONENT SIDE)


FL153
Chroma emphasis fo
RV151
Y/C Separation
IC151
16
1
17
64
32
49
33
48
IC155
4 1
5 8
IC153
8 5
1 4
IC003
4 1
5 8
CN001
15
1
CN102
1 6
CN101
1 10
CN002
13 1
14 2

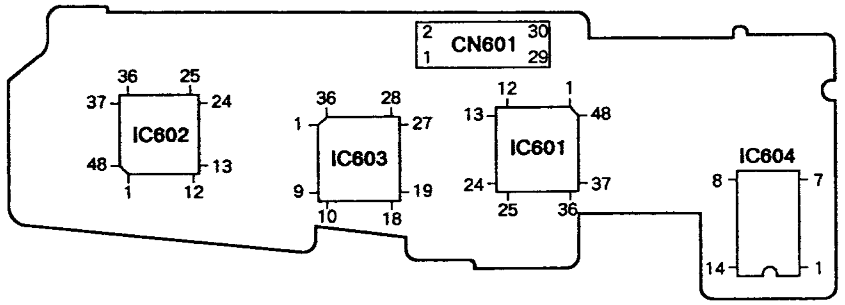
VS-93P BOARD (CONDUCTOR SIDE)


IC152
36 25
37
24
48
13
1 12

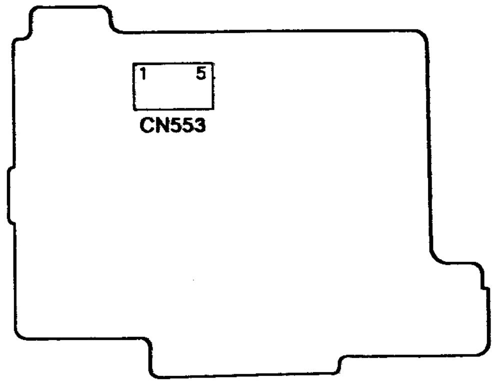
DD-47P BOARD (COMPONENT SIDE)



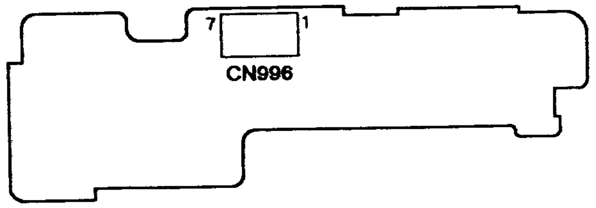
AU-135P BOARD (CONDUCTOR SIDE)


CN601
2 30
1 29
IC602
36 25
37
24
48
13
1 12
IC603
36 28
1
27
9
19
10 18
IC601
12 1
13
48
24
37
25 36
IC604
8
7
14
1

MA-143P BOARD (COMPONENT SIDE)



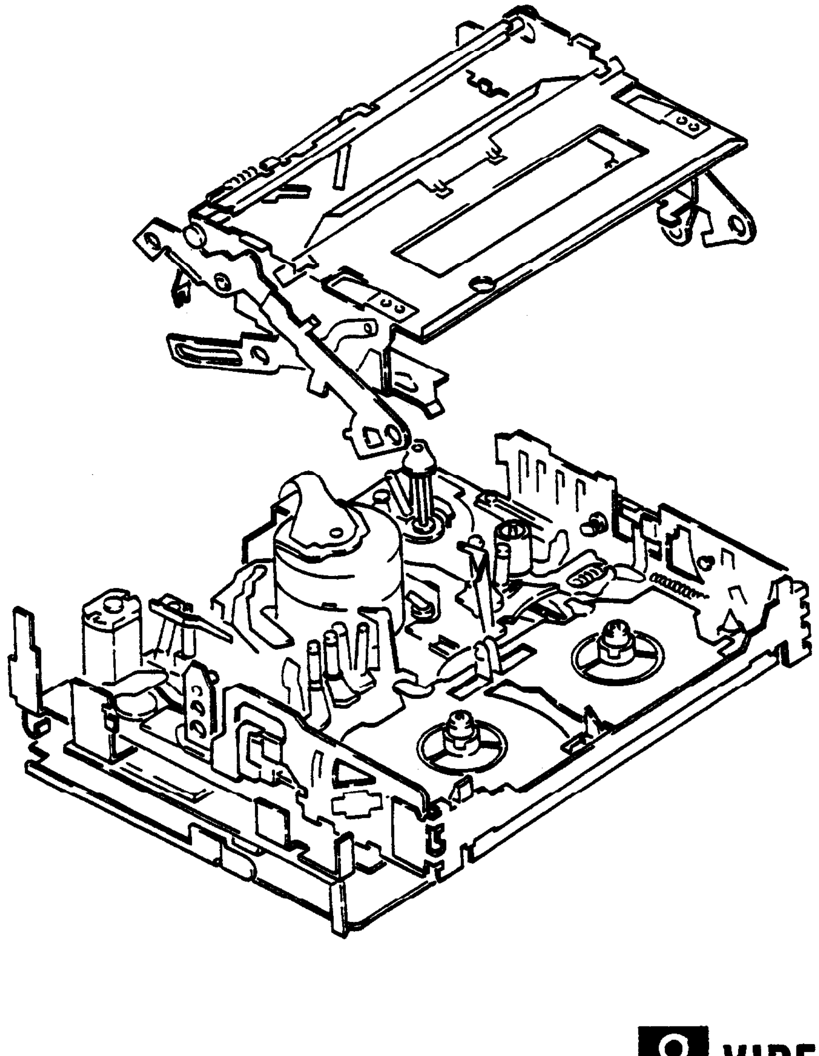
MF-175P BOARD (CONDUCTOR SIDE)



8mm Video MECHANICAL ADJUSTMENT MANUAL II

FL MECHANISM (Q MECHANISM) Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER
SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.

Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-4 Handling of Mode Selector".)

1-1 CASSETTE COMPARTMENT HOLDER ASSEMBLY (Fig. 1)

1. Removal

1) Select the USE mode.
2) Remove the screw ●, and then, the LS support ●.
3) Remove the four screws ●, and then, the LS frame assy ●.
4) Remove the three lock washers ●, and then, the washer ●, bar, joint ●, T protector assy ●, and TP arm assy ● in that order.
5) Remove the two screws●, and then, the two arm shafts A●.
6) Remove the shaft through the long hole●. With the cassette compartment holder assembly●rotated in a direction of the arrowⒶ, remove the long holes●and●from the shaft in that order, and then, remove the cassette compartment holder assembly●.
7) Slide the BS holder●in a direction of the arrow Ⓑ as shown in Fig. A and remove it in a direction of the arrowⒸ.

Note : When this is done, be careful not to drop the steel ball and spring, compression out of the BS holder ●.

2. Mounting

1) Select the USE mode.
2) Mount the BS holder●in the reverse order of its removal. Note: Refer to Fig. A.
3) Mount the shafts in the order of the long holes ●, ●and● of the cassette compartment holder assembly●, respectively.

Note : When this is done. rotate the cassette compartment holder assembly●in a direction of the arrow Ⓐ to mount it until the long hole is aligned with the oval shape of the shaft.

4) Align the oval shape of the two arm shafts A●with the long holes of the LS chassis, fit them in firmly and fix with the two screws●.
5) Mount the TP arm assy ●, T protector assy ● and bar, joint ●, respectively. Then, mount the washer ● and three lock washers ●.
6) Mount the LS frame assy ● to the chassis and fix with the four screws ●.
7) Mount the LS support ● to the chassis and fix with the screw ●.

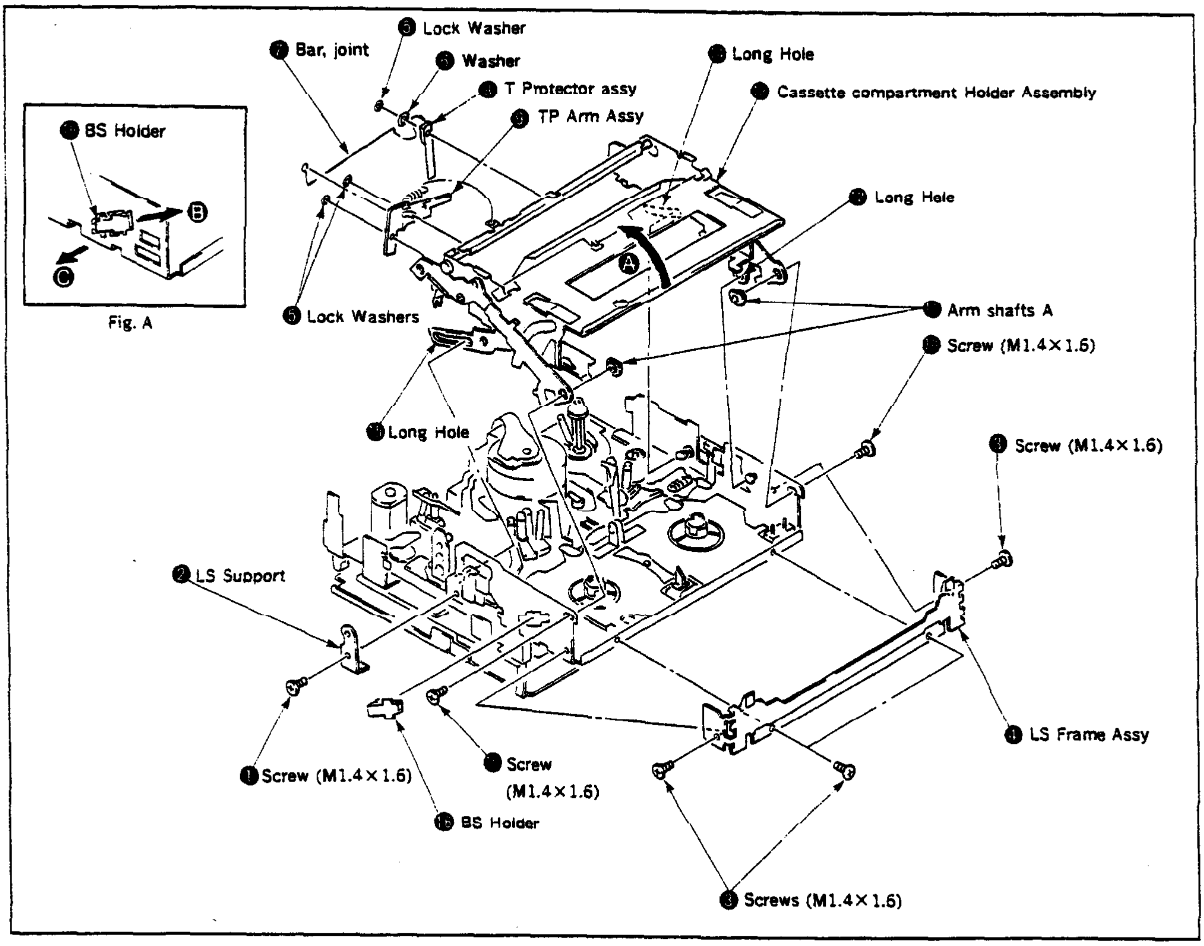

● BS Holder
Ⓑ
Ⓒ
Fig. A
● Bar, joint
● Lock Washer
● Washer
● T Protector assy
● TP Arm Assy
● Long Hole
● Cassette compartment Holder Assembly
● Long Hole
Ⓐ
● Lock Washers
● Arm shafts A
● Screw (M1.4×1.6)
● Long Hole
● Screw (M1.4×1.6)
● LS Support
● LS Frame Assy
● Screw (M1.4×1.6)
● Screw (M1.4×1.6)
● BS Holder
● Screws (M1.4×1.6)

Fig. 1

1-2 CASSETTE COMPARTMENT LOCK HEIGHT ADJUSTMENT (Fig. 2)

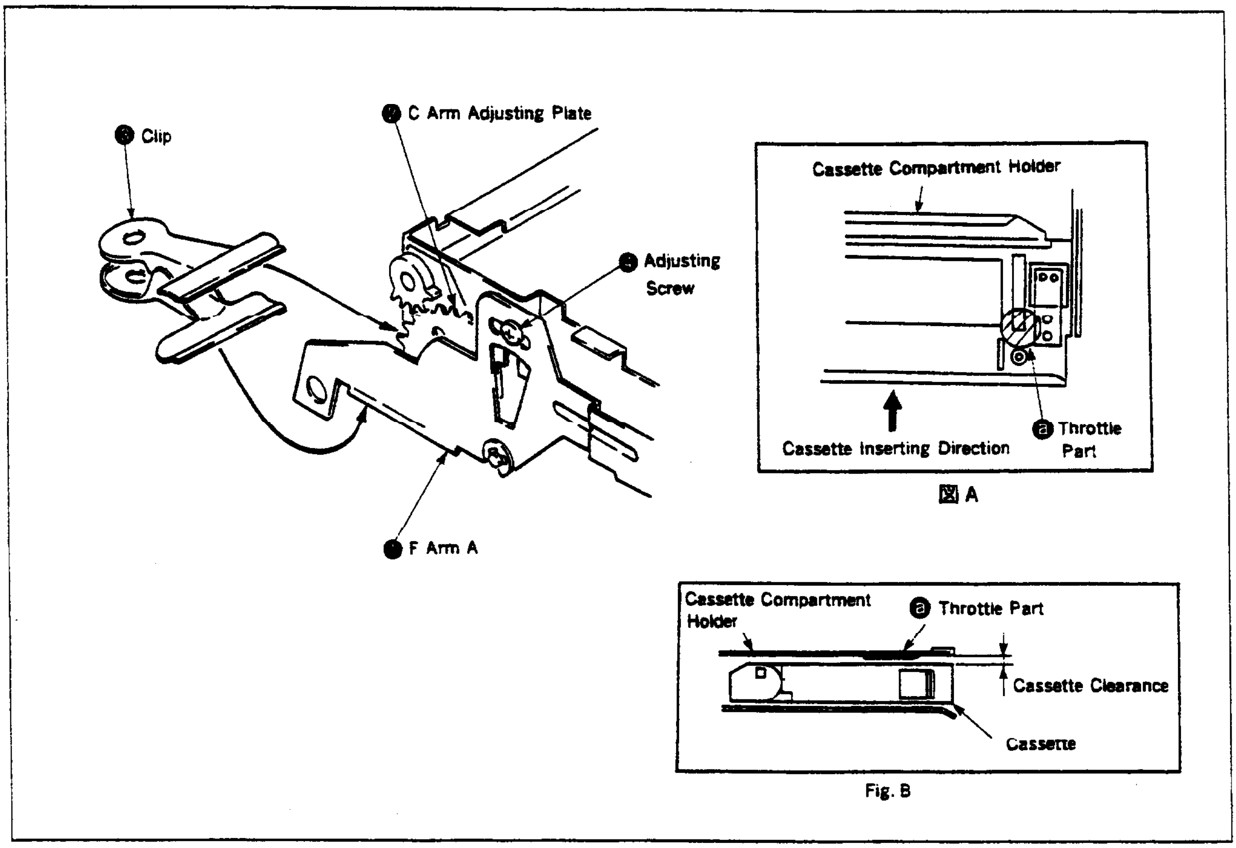
1) Using a spacer, etc., insert a 15.3mm-thick cassette to lock the cassette compartment.

Note : As shown in Fig. A, a 15.3mm-thick portion may be under the throttle part ⓐ.

2) Pressing the part ⓐ, nip the F arm A ● and the first tooth of the C arm adjusting plate ● with the clip ●, and tighten the adjusting screw ● at a torque of 1kg•cm.

3) Apply Screw Lock to the adjusting screw ● after making sure of the following clearances between the throttle part ⓐ of the cassette compartment holder and the cassette as shown in Fig. B.

- For 15mm-thick dummy cassette : 0.5 – 0.9
- For 15.2mm-thick dummy cassette : 0.3 – 0.7


● Clip
● C Arm Adjusting Plate
● Adjusting Screw
● F Arm A
Cassette Compartment Holder
Cassette Inserting Direction
ⓐ Throttle Part
Cassette Compartment Holder
ⓐ Throttle Part
Cassette Clearance
Cassette

図A

Fig. B

Fig. 2

1-3 OPERATION WITH CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED

1. Putting into Loading state (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera section removed. (Make the mechanism deck ready to operate.)
2) Place the cap ● on the LED assembly ●.
3) Press the pin of the push switch ● (ON state) and fix it with adhesive tape ● in that state.
4) Press the locking plate release arm ● in an arrow direction. The set is made ready for loading.

2. Putting into the REC Mode

1) Short the TEST pins (SS-82 board CN404 pins ● and ● for CCD-V11/V88) to place into the TEST mode.

For CCD-V11/V88 ; SS-82 board CN404
TEST pin connector

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The set is placed into the TEST mode by shorting the pins ● and ●.

2) After completing the step 1), set the power switch to VTR (or CAMERA).
3) Turn on the REC switch. (If the set is placed in the TEST mode, detection of S and T reel table rotation is disabled and the tape can run.)

3. Putting into EJECT

1) Turn on the EJECT switch.

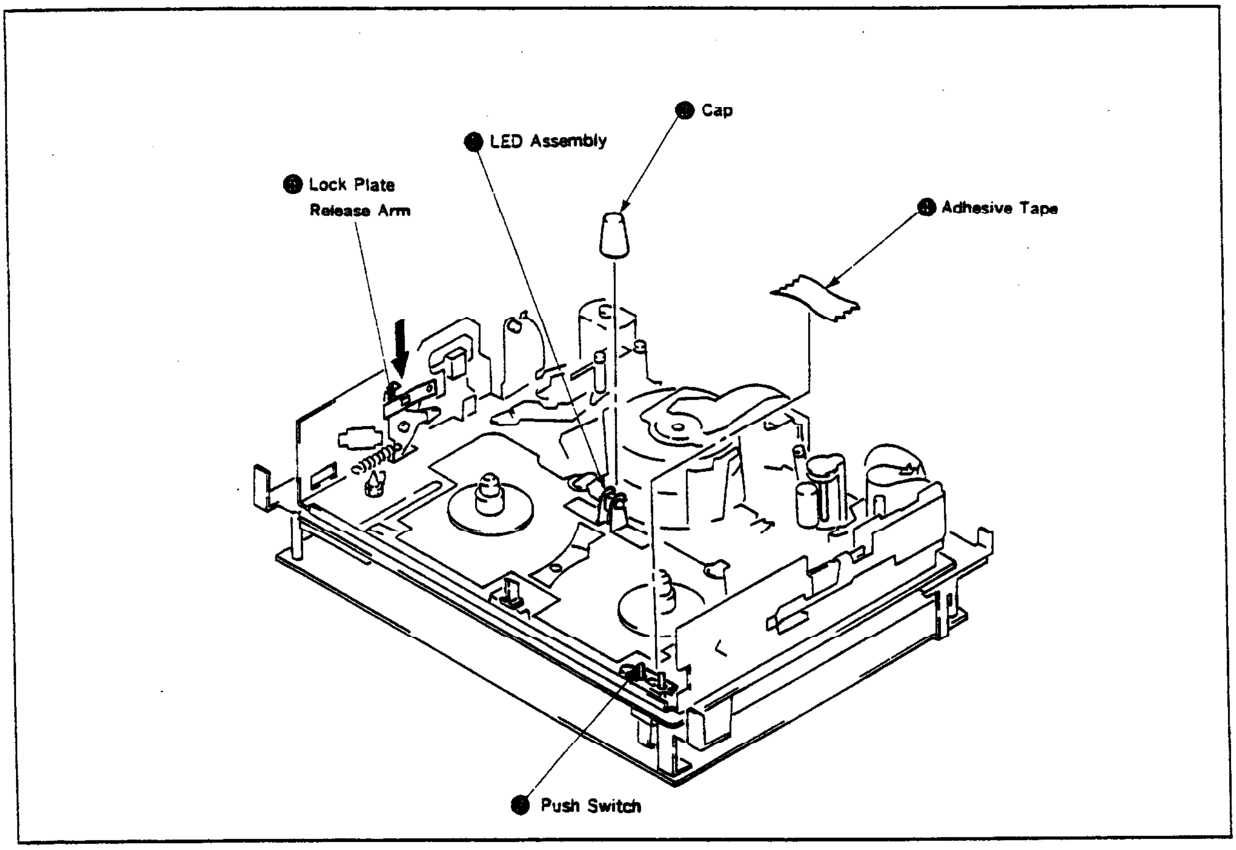


Fig. 3

1-4 HANDLING OF MODE SELECTOR

- Mount the MODE SELECTOR III panel to the mode selector. U, FL, O and O' mechanisms have different mode indications respectively. Select your disired type. (Fig. 4)

1. Construction (Fig. 5)

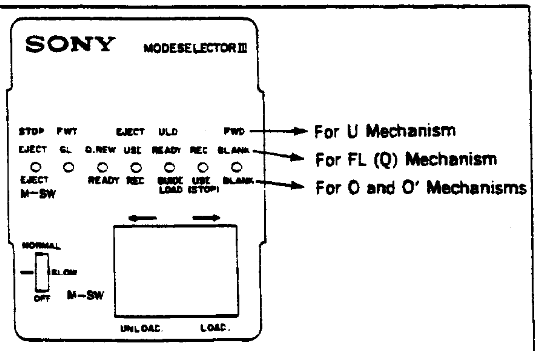
2. Connection (Fig. 6)

For CCD-VII/V88

1) Remove the plate, ornamental ①.
2) Remove the screw ②, and then, the LB-12 board ③.
3) Remove the FP-114 flexible connector ④ and loading motor connector ⑤, and insert them into the MODE SELECTOR III conversion connector respectively.
4) Insert the M-SW connector of the mode selector into the MODE SELECTOR III conversion connector.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, EJECT, USE, GL, Q.REW, GL, REC and READY light up in that order.
4) When changing over from the READY mode back to the EJECT mode, press the left M mode selector button to select your desired mode.


SONY
MODESELECTOR III
STOP FWT EJECT ULD FWD
EJECT GL Q.REW USE READY REC BLANK
EJECT READY REC GUIDE LOAD USE (STOP) BLANK
M-SW
NORMAL
SLOW
OFF
M-SW
UNLOAD.
LOAD.
For U Mechanism
For FL (Q) Mechanism
For O and O' Mechanisms

Ref. No. J-13 MODE SELECTOR III Panel

Fig. 4

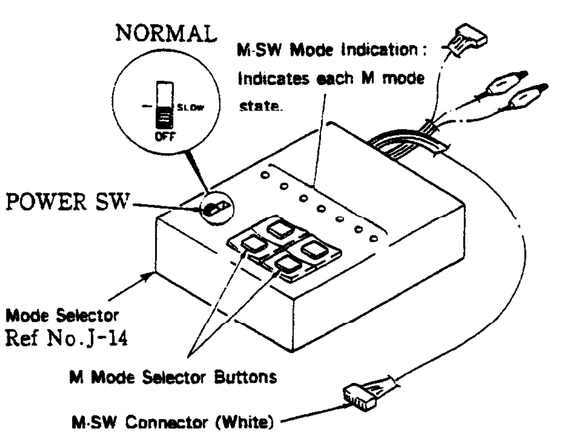

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref No.J-14
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-V11/V88

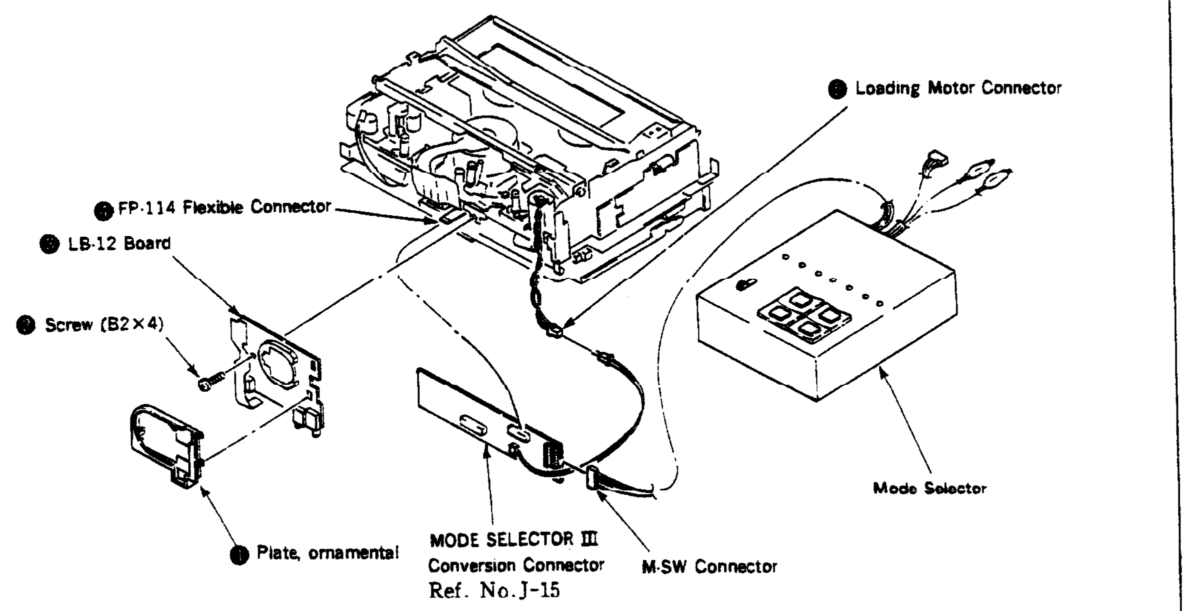
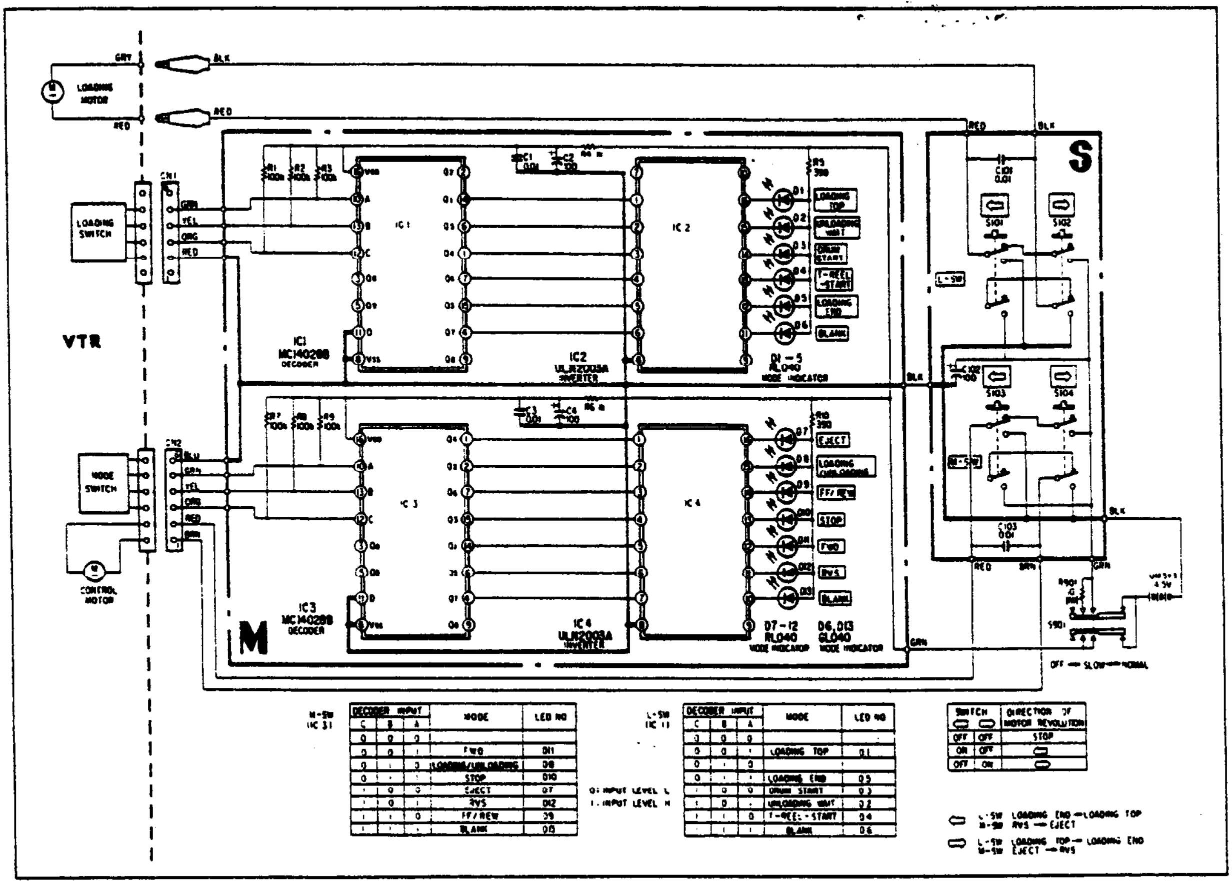

⑤ Loading Motor Connector
④ FP-114 Flexible Connector
③ LB-12 Board
② Screw (B2×4)
① Plate, ornamental
MODE SELECTOR III
Conversion Connector
Ref. No.J-15
M-SW Connector
Mode Selector

Fig. 6

1-5 MODE SELECTOR SCHEMATIC DIAGRAM


LOADING MOTOR
LOADING SWITCH
VTR
MODE SWITCH
CONTROL MOTOR
GRY
BLK
RED
GRN
YEL
ORG
BLU
CN1
CN2
IC1 MC14028B DECODER
IC2 ULN2003A INVERTER
IC3 MC14028B DECODER
IC4 ULN2003A INVERTER
D1-5 RL040 MODE INDICATOR
D7-12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL START
LOADING END
BLANK
EJECT
LOADING UNLOADING
FF/REW
STOP
FWD
RVS
S
M
S101
S102
S103
S104
L-SW
M-SW
R901
S901
OFF — SLOW — NORMAL
DECODER INPUT
MODE
LED NO
SWITCH
DIRECTION OF MOTOR REVOLUTION
0: INPUT LEVEL L
1: INPUT LEVEL H

1-6 MODE SELECTOR PARTS LIST

CAPACITOR

Ref. No	Part No.	Description		
C1	1-108-579-00	MILER	0.01µF	50V
C2	1-123-333-00	ELECT	100µF	24V
C3	1-108-579-00	MILER	0.01µF	50V
C4	1-123-333-00	ELECT	100µF	24V
C101	1-108-579-00	MILER	0.01µF	50V
C102	1-123-333-00	ELECT	100µF	24V
C103	1-108-579-00	MILER	0.01µF	50V

DIODE

Ref. No	Part No.	Description
D1	8-719-812-31	DIODE TLR123
D2	8-719-812-31	DIODE TLR123
D3	8-719-812-31	DIODE TLR123
D4	8-719-812-31	DIODE TLR123
D5	8-719-812-31	DIODE TLR123
D6	8-719-812-33	DIODE TLG123A
D7	8-719-812-31	DIODE TLR123
D8	8-719-812-31	DIODE TLR123
D9	8-719-812-31	DIODE TLR123
D10	8-719-812-31	DIODE TLR123
D11	8-719-812-31	DIODE TLR123
D12	8-719-812-31	DIODE TLR123
D13	8-719-812-33	DIODE TLG123A

IC

Ref. No	Part No.	Description	
IC1	8-752-240-28	IC	TC4028BP
IC2	8-752-120-03	IC	µPA2003C
IC3	8-759-240-28	IC	TC4028BP
IC4	8-759-120-03	IC	µPA2003C

RESISTOR

Ref. No	Part No.	Description		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1 CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquid (Ref. No. J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. Make sure to follow the instructions above for cleaning the rotary drum assembly.

2-2 CLEANING OF TAPE PATH (Fig. 7)

1) In the EJECT mode, clean the tape running system (TG-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, pinch roller, and capstan shaft) and the lower drum, using a superfine applicator (Ref. No. J-3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the superfine applicator (Ref. No. J-3).

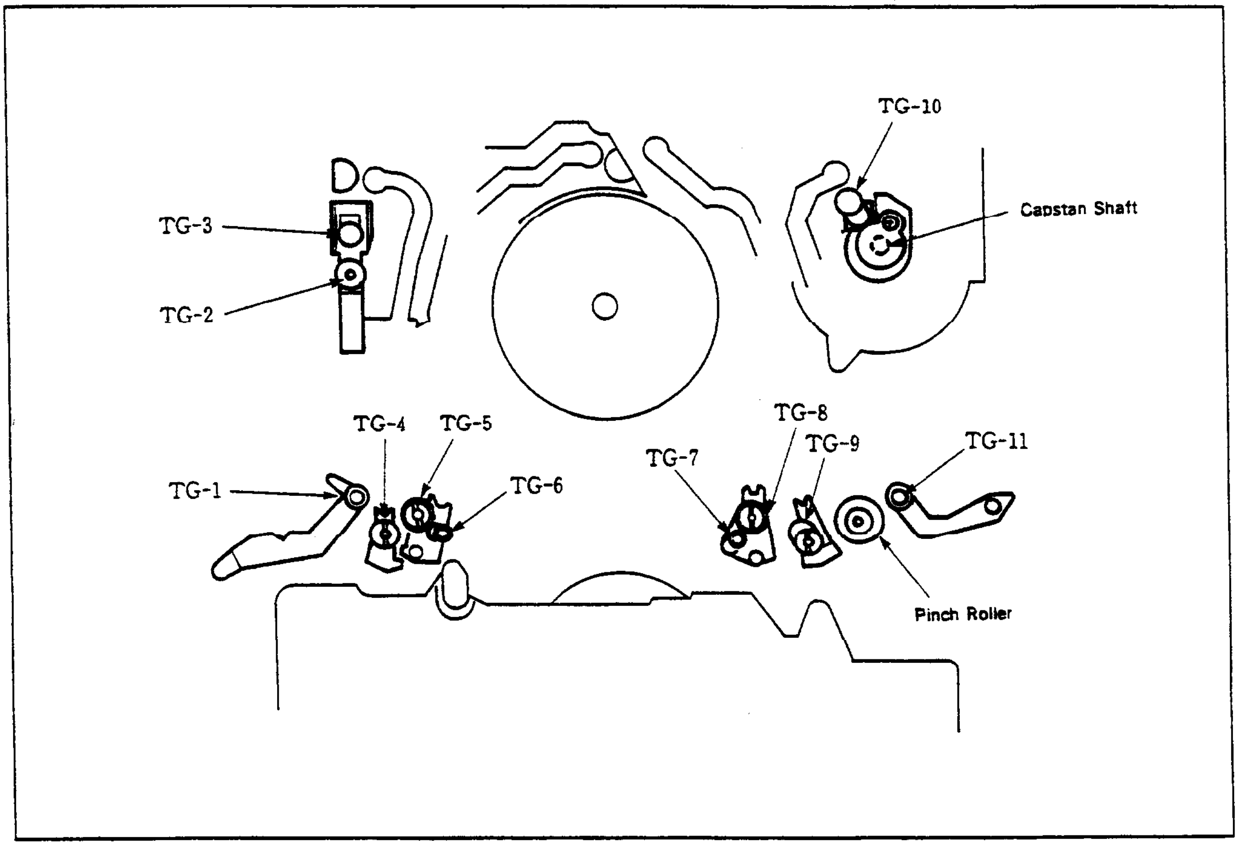


Fig. 7

2-3 PERIODIC CHECK ITEMS

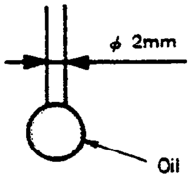
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-728-212-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley sheft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	1-541-607-11
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT-68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

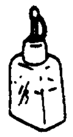


2-4 Service jigs list

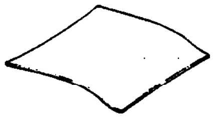
Ref. No.	Neme	Part No.	Fixture No.	Usage and Others
J-1	Cleasing fluid	Y-2031-001-0	—	
J-2	Cleasing cloth	2-034-697-00	—	
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)		—	
J-4	Head degausser	Widely available	—	
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-7	Dial tension gauge	J-6080-827-A		Various torque measurement
J-8	Tension measurement reel	J-6080-831-A		With ϕ30 tape
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Drum screwdriver (Hexagonal wrench screwdriver)	7-700-766-01		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector III panel	J-6082-023-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector III conversion connector	J-6082-021-A		

Other equipment
- Oscilloscope
- Analog tester (20kΩ)

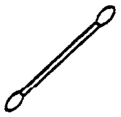
J-1



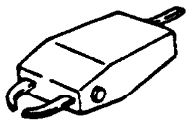
J-2



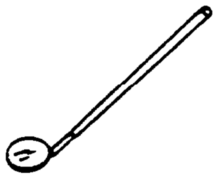
J-3



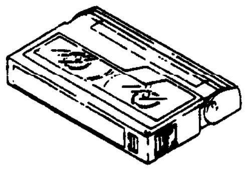
J-4



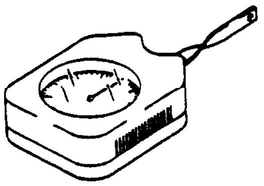
J-5



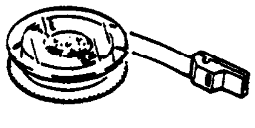
J-6



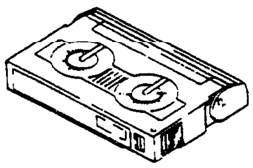
J-7



J-8



J-9



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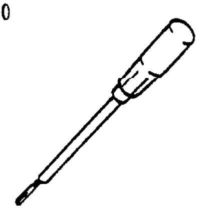
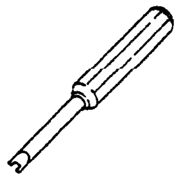
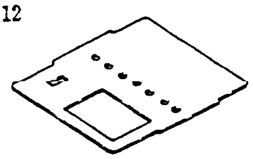


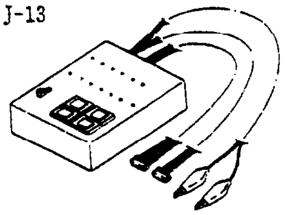
J-11



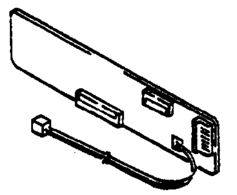
J-12



J-13



J-14



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-14) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1 LED BASE (Fig. 8)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) As shown in Fig. A, rotate the LED in a direction of the arrow Ⓐ and remove it in a direction of the arrowⒷ.
4) Remove the three screws ●, ● and ●.
5) Lifting the LED base ●, remove it by pushing it in a direction of the arrowⒸ.

Note : Dismount and remount the LED base carefully, because its holder is easily deformed.

2. Mounting

1) Select the USE mode.
2) Put the claw ● of the LED base ● in the notch ● of the LS chassis without catching the LED in between. Next, fit to the dowels ● at 2 places.
3) Mount and tighten the screws ●, ● and ● in that order.
4) As shown in Fig. B, set the LED in a direction of the arrowⒶ and rotate it in a direction of the arrowⒷ to fix.
5) As shown in Fig. C, bend a flexible boord and put it in the holder.

Note : In the step2), make sure that the barring ● of the arm assy, gear can appears in the hole of the LED base. (Fig. D)

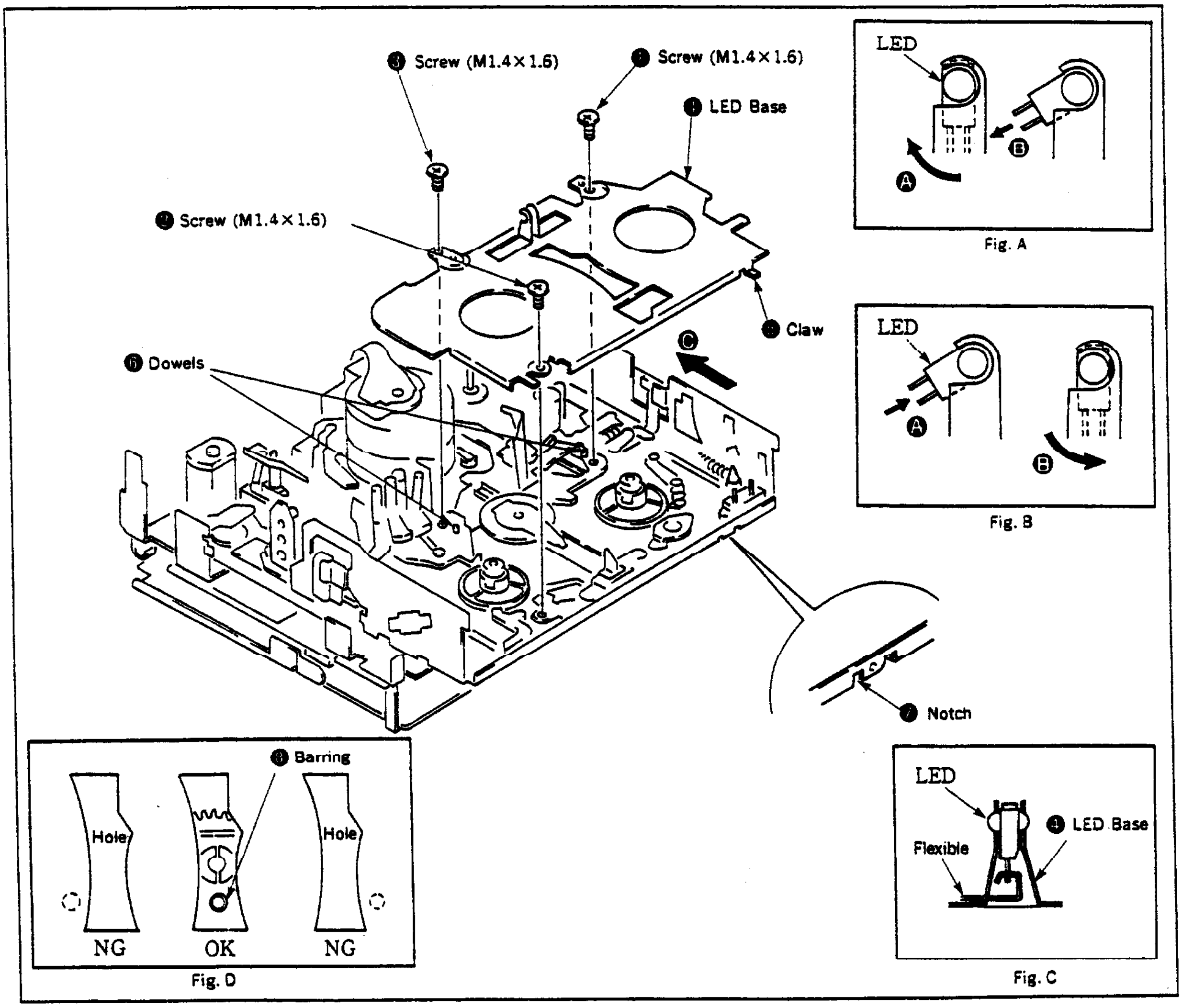


Fig. A

Fig. B

Fig. C

Fig. D

Fig. 8

3-2 RL BASE ASSEMBLY, RETAINER (Fig. 9)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assemlby.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ●, and then, retainer ●.
5) Remove the screw ●, and then, RL base assembly ●.

2. Mounting

1) Select the USE mode.
2) With the screw ●, mount the RL base assembly ● to the LS chassis.
3) With the screw ● fix the retainer ● to the RL base assembly ●.
   When this is done, align the bump part ⁕ of the retainer ● with the bump part ⁕ of the guide rail T. (Fig. A)
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

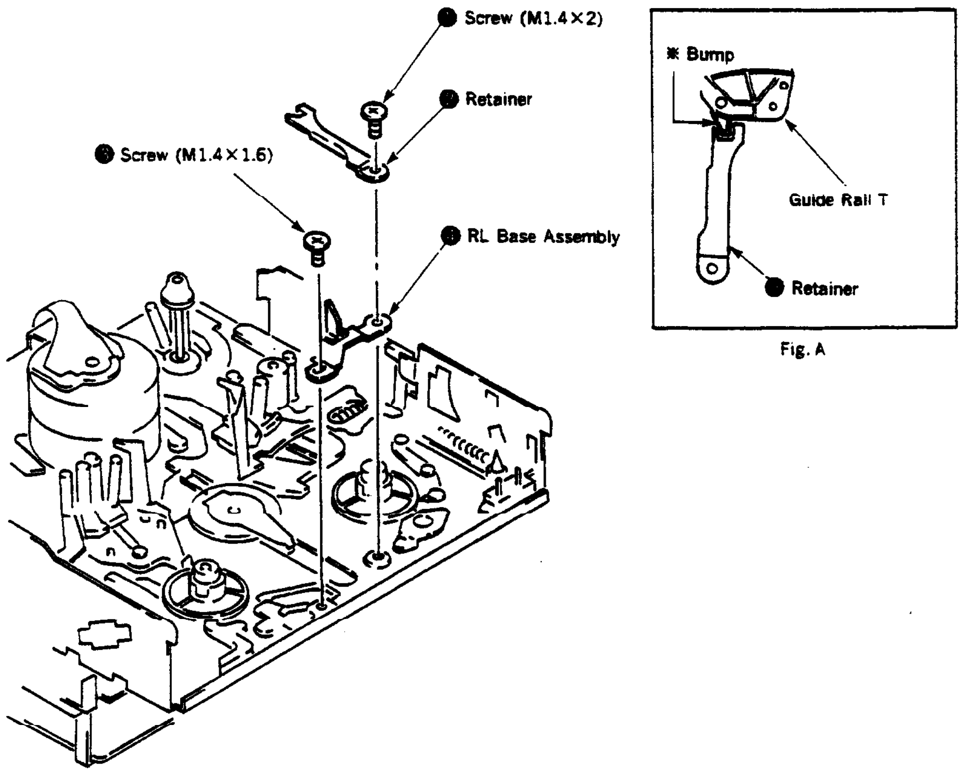

● Screw (M1.4×2)
● Retainer
● Screw (M1.4×1.6)
● RL Base Assembly
⁕ Bump
Guide Rail T
● Retainer
Fig. A

Fig. 9

3-3 TABLE ASSY, REEL, SUPPLY (Fig. 10)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) As shown in Fig. A, making use of slackness of the tension regulator string ● in the USE mode, remove the string out of the groove of the table assy, reel, supply ●. When this is done, be careful not to bend the tension regulator string ● and the S soft arm ● must be moved in a direction of the arrow Ⓑ.
5) Remove the table assy, reel, supply ●.

Note : Dismount and remount the table assy, reel, supply ●, holding the reel claw ※.

2. Mounting

1) Select the USE mode.
2) As shown in Fig. B, move the S soft arm ● in a direction of the arrowⒷ.
3) Avoiding the tension regulator string ●, mount the table assy, reel, supply ● to the shaft ●.
4) Put the tension regulator string ● in the groove of the table assy, reel, supply ● and fit it properly by turning the table assy, reel, supply ●.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Do not touch the tension regulator string ● with naked hand. Also, be careful of adhesion of grease, etc.

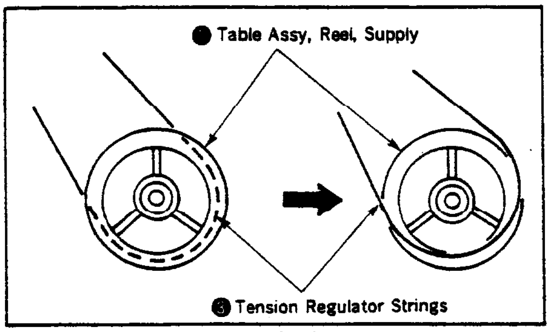

● Table Assy, Reel, Supply
● Tension Regulator Strings

Fig. A

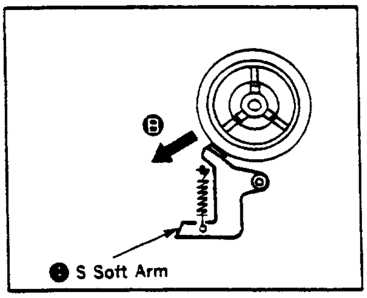


Fig. B

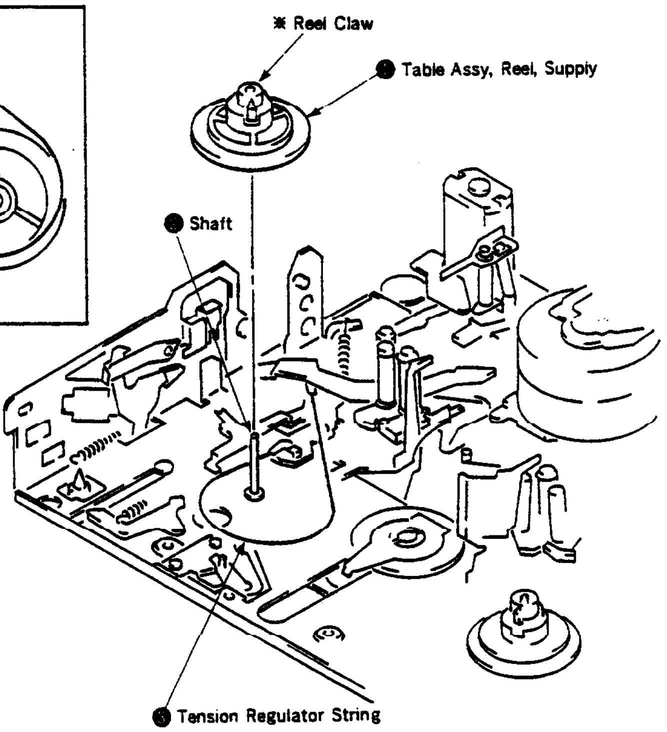

※ Reel Claw
● Table Assy, Reel, Supply
● Shaft
● Tension Regulator String

Fig. 10

3-4 TABLE ASSY, REEL, TAKE-UP (Fig. 11)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the retainer.
5) Dispace the T ratchet ❶ in a direction of the arrowⒶ.
6) With the claw (T ratchet head) of the T ratchet ❶ moved in a direction of the arrowⒷ, remove the Table assy, reel, take-up ❷.

Note : Dismount and remount the Table assy, reel, take-up ❷, holding the reel claw ※.

2. Mounting

1) Select the USE mode.
2) With the claw (T ratchet head) of the T ratchet ❶ moved in an arrow direction, mount the Table assy, reel, take-up ❷ to the shaft ❸.
3) Referring to 3-2, mount the retainer.
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

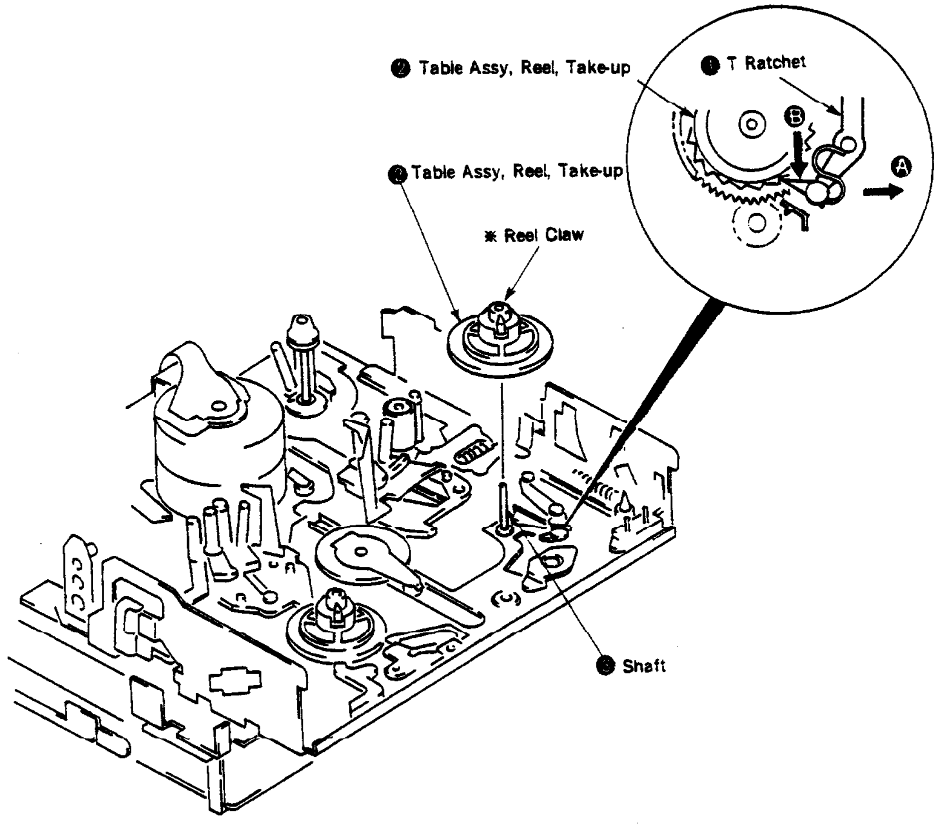


Fig. 11

3-5 ONEWAY CLUTCH ASSEMBLY (Fig. 12)

1. Removal

1) Select the $\boxed{\text{USE}}$ mode.
2) Referring to the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ❶, and then, oneway clutch assembly ❷.

2. Mounting

1) Select the $\boxed{\text{USE}}$ mode.
2) Mount the oneway clutch assembly ❷ to the LS chassis and fix with the screw ❶.
3) Referring 3-1, mount the LED base.
4) Referring to 1-1, mount the cassette compartment holder assembly.

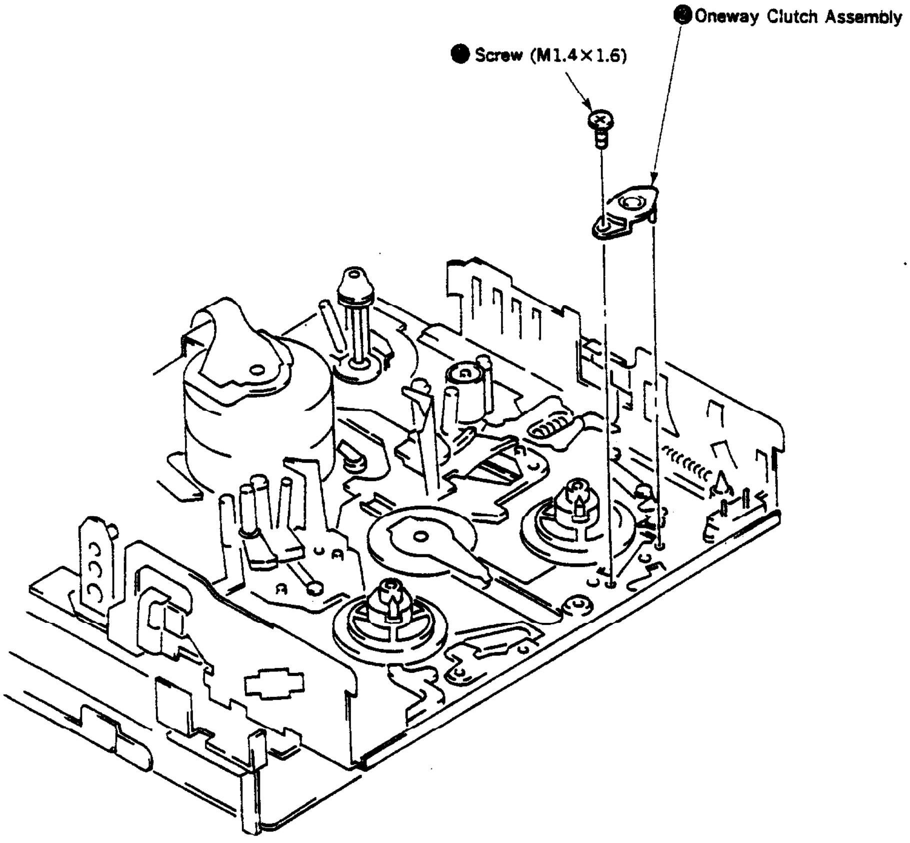


Fig. 12

3-6 S SOFT ARM ASSEMBLY (Fig. 13)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Rerove the lock washer ●, and then, the spring, tension ●.
5) Remove the S soft arm assembly ● by rotating it in an arrow direction (until the hook ● comes off the LS chassis).

2. Removal

1) Select the USE mode.
2 As shoms in Fig. A, apply a quarter drip of oil to the arrowindicated part of the shaft ●.
3) Mount the S soft arm assembly ● to the shaft ●, rotating it in as arrow direction. (Be careful not to bend the hook ●.)
4) Hook the spring, tension 2 onto the claw and fix it with lock washer 1.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holder assembly.

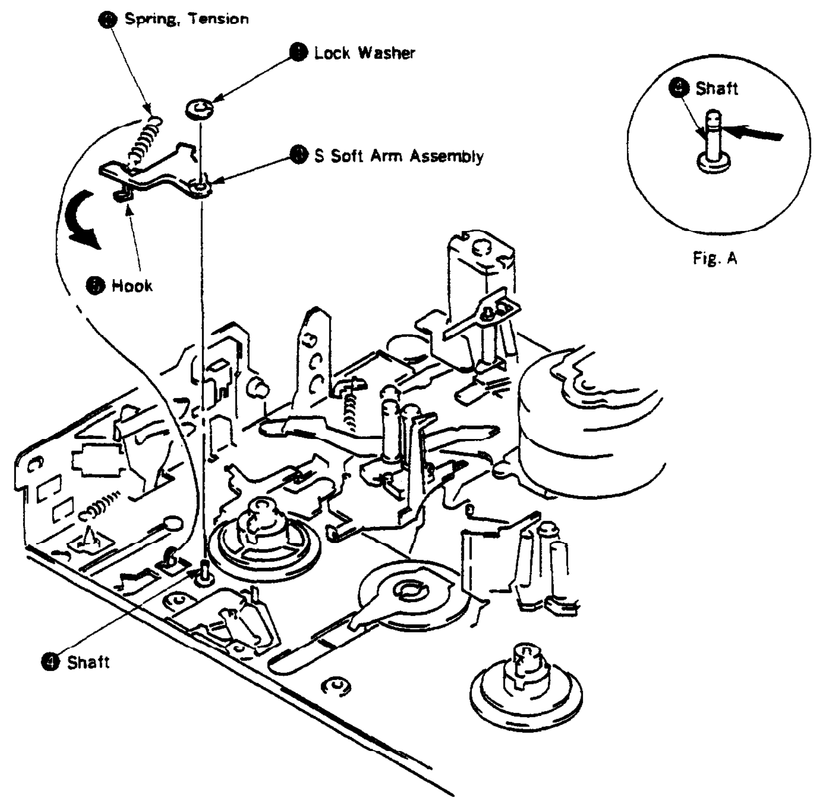


Fig. 13

3-7 LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the RL base assembly and retainer.
5) Remove the lock washer ❶, and then, arm assy gear ❷.
6) Select the Q, REW mode.
7) Remove the flexible rotary shaft ❸, and then, the flexible connector ❹.
8) Remove the E retaining ring ❺ and three screws ❻.
9) Remove the LS chassis assembly ❼ in a direction of the arrow Ⓓ.

2. Mounting

1) As shown in Fig. A, apply Molyton grease to the arrow-indicated part of the LS chassis assembly ❼.
2) Unload in the RDY mode. Start docking in the Q, REW mode after first GL. When docking the mechanical chassis and LS chassis assembly ❼, it is necessary to place the following parts at specified positions.
3) Put the pin ●of the pinch arm assembly ●into the left side of the pinch press arm assembly●. (Fig.19)
4) Move the TG-1 arm assembly●in a direction of the arrow Ⓐ to put the pin ●into the concave of the arm assembly ●. (Fig. 17)
5) put the pin●of the S ratchet●into the right side the of the arm assembly●. (Fig. 17)

Simultaneously performing the operations above, push the roller of the guide lock arm ● With the arm arc portion of the guide arm T assembly● (Fig. 15) to push the LS chassis assembly ❼ in a direction of the arrowⒺ, and at the same time, engage the claws of the guide rail base 1●, guide rail base 2●and guide rail base3●with those of the guide rail S● and guide rail T●. (Fig. 16)

Then, align the shafts ❾ of the mechanical chassis With the four long joints of the LS chassis assembly ❼, and put the LS pin●of the LS arm assembly●in the groove of the LS cam plate●. (Fig.18)

Note : Before docking, confirm that both EJ arm and LS arm are deeply inserted into the shafts. (If not properly fit, the set does not function even if the LS chassis is docked.

6) Mount the E retaining ring ❺ and three screws ❻.
7) Mount the flexible rotary shaft ❸ and flexible connector ❹.
8) Select the USE mode.
9) Mount the arm assy gear ❷ and fix with the lock washer ❶.
10) Referring to 3-2, mount the RL base assembly and retainer.
11) Referring to 3-1, mount the LED base.
12) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

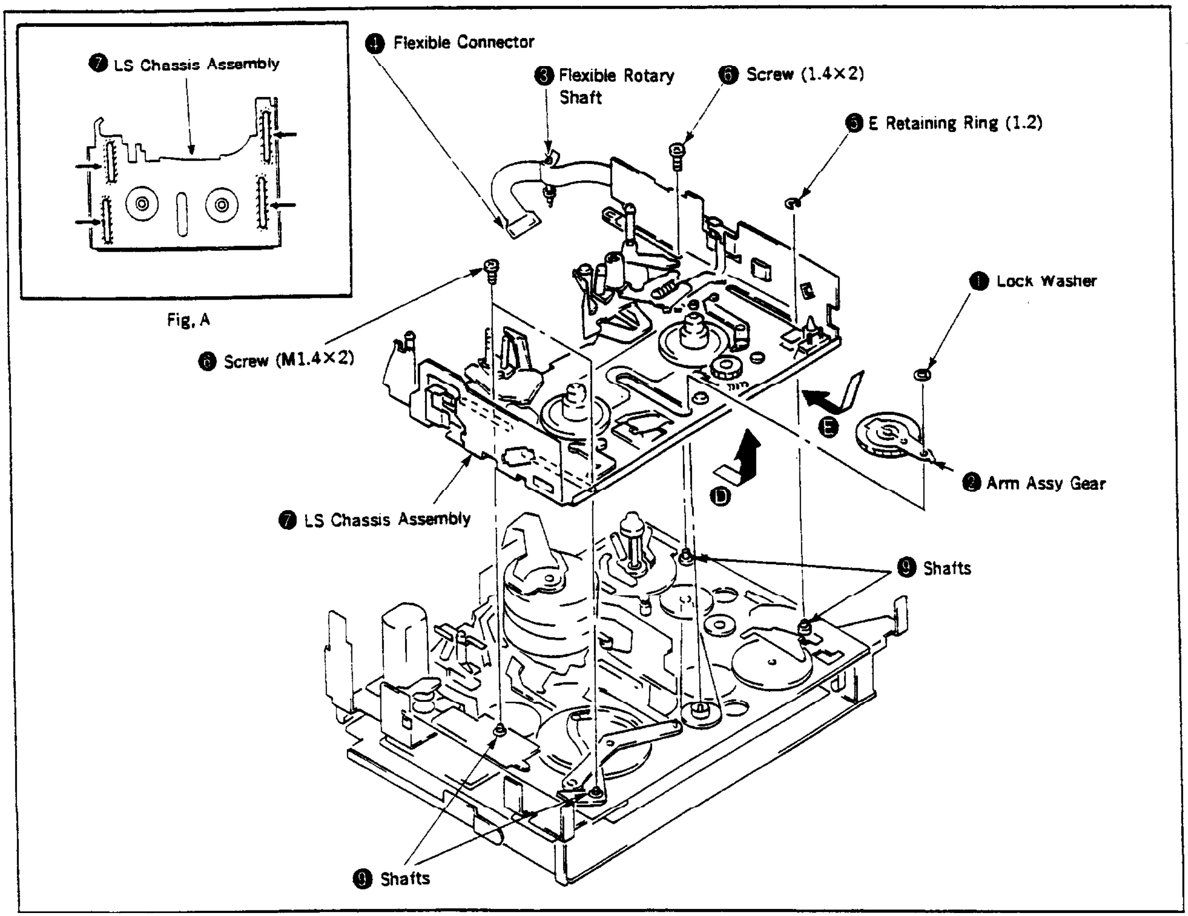


Fig. 14

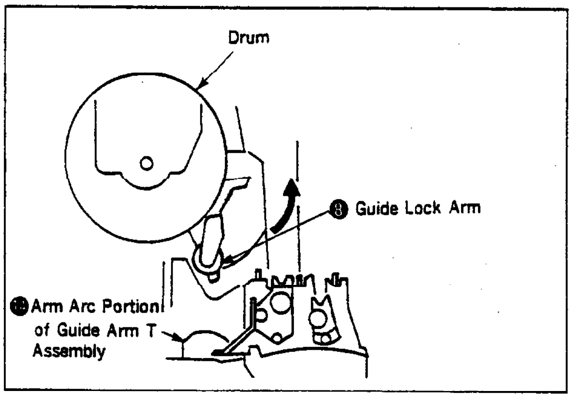

Drum
Guide Lock Arm
Arm Arc Portion of Guide Arm T Assembly

Fig. 15

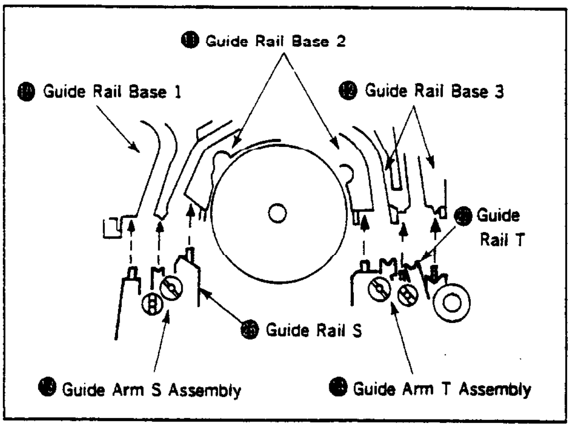

Guide Rail Base 2
Guide Rail Base 1
Guide Rail Base 3
Guide Rail T
Guide Rail S
Guide Arm S Assembly
Guide Arm T Assembly

Fig. 16

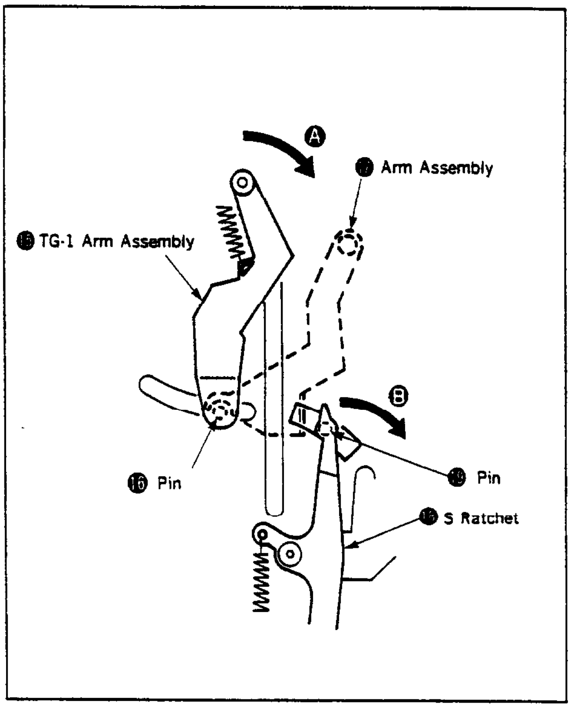

A
Arm Assembly
TG-1 Arm Assembly
B
Pin
Pin
S Ratchet

Fig. 17

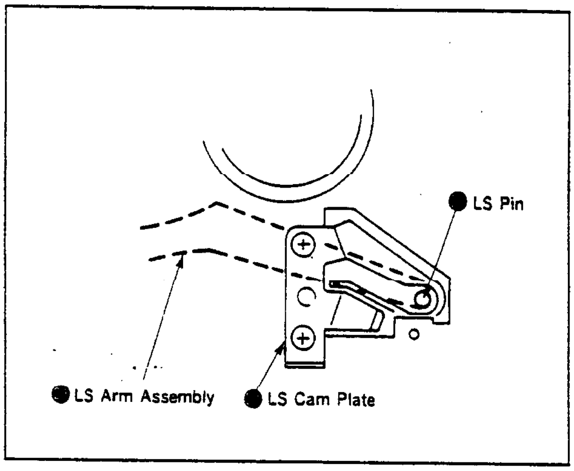

LS Pin
LS Arm Assembly
LS Cam Plate

Fig. 18

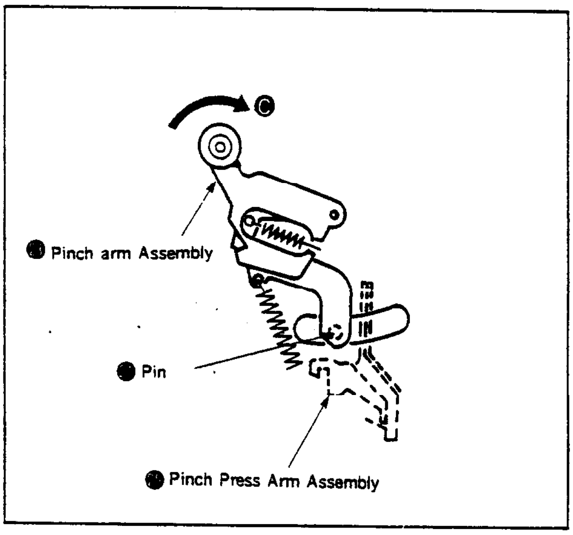

C
Pinch arm Assembly
Pin
Pinch Press Arm Assembly

Fig. 19

-8 PINCH ARM ASSEMBLY (Fig. 20)

Removal

) Referring to 1-1, remove the cassette compartment holder assembly.

) Referring to 3-7, remove the LS chassis assembly.

) Remove the lock washer ② from the back of the LS chassis assembly ①.

) Remove the spring, tension ③, and then, pinch arm assembly ④.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ⑤ over one third of a drip up to half a drip.
2) put the rotation center of the pinch arm assembly in the boss ⑤ hole, and the pin ⑥ in the long hole.
3) Hook the spring, tension ③ onto the upper groove of the pinch return spring shaft ⑦.
4) Mount the lock washer ② from the back of the LS chassis assembly ①.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

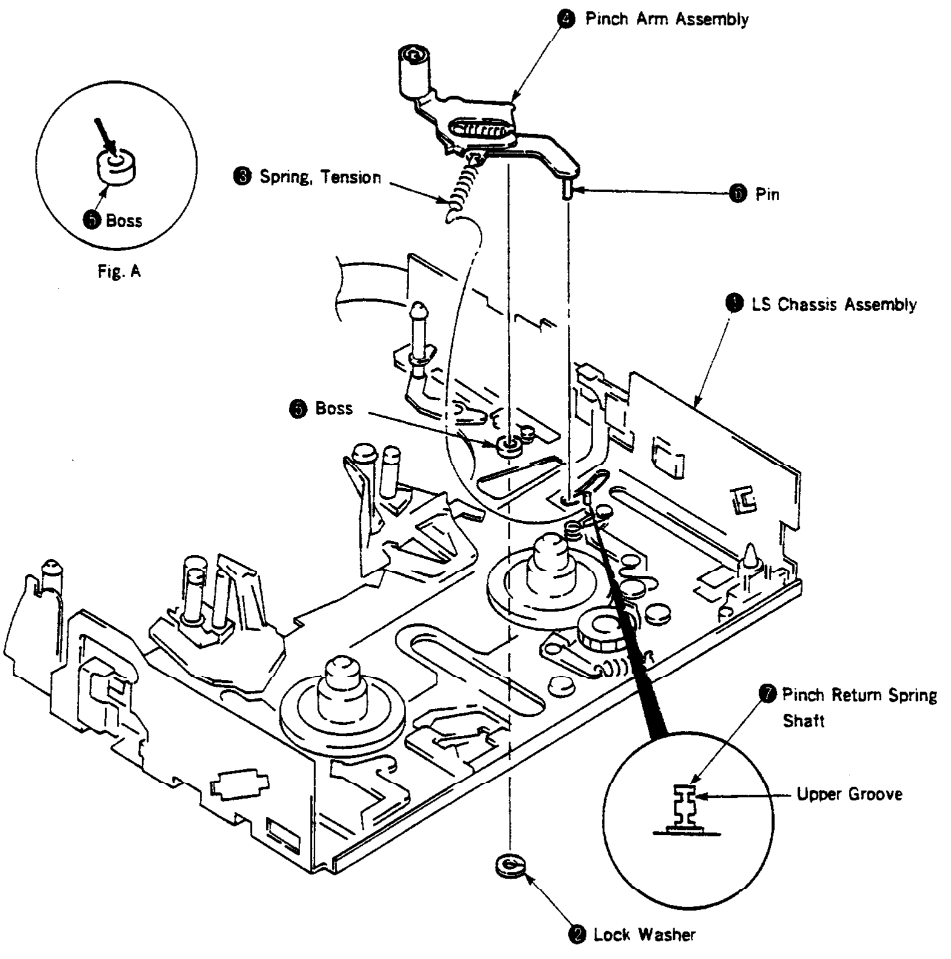

④ Pinch Arm Assembly
⑤ Boss
Fig. A
③ Spring, Tension
⑥ Pin
① LS Chassis Assembly
⑤ Boss
⑦ Pinch Return Spring Shaft
Upper Groove
② Lock Washer

Fig. 20

3-9 TG-11 ARM ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
4) Remove the TG-11 arm assembly ❸ and spring, torsion ❹.

Note : Be careful not to deform the TG-11 arm.

2. Mounting

1) As shown in Fig. A, apply oil to a boss hole over one third of a drip up a half a drip.
2) As shown in Fig. B, put the longer arm of the spring, torsion ❹ between the pinch arm boss ❺ and cam slider shaft ❽ of the LS chassis. Next, Hook the shorter arm of the spring, torsion ❹ around the pin ❻ of the TG-11 arm assembly ❸, rotate the TG-11 arm assembly and fix with the lock washer ❷. When this is done, see to it that the pin ❻ of the TG-11 arm assembly ❸ is located to the left side of the cam slider ❾ as shown in Fig. C.
3) Referring to 3-7, mount the LS chassis.
4) Referring to 1-1, mount the cassette compartment holder.

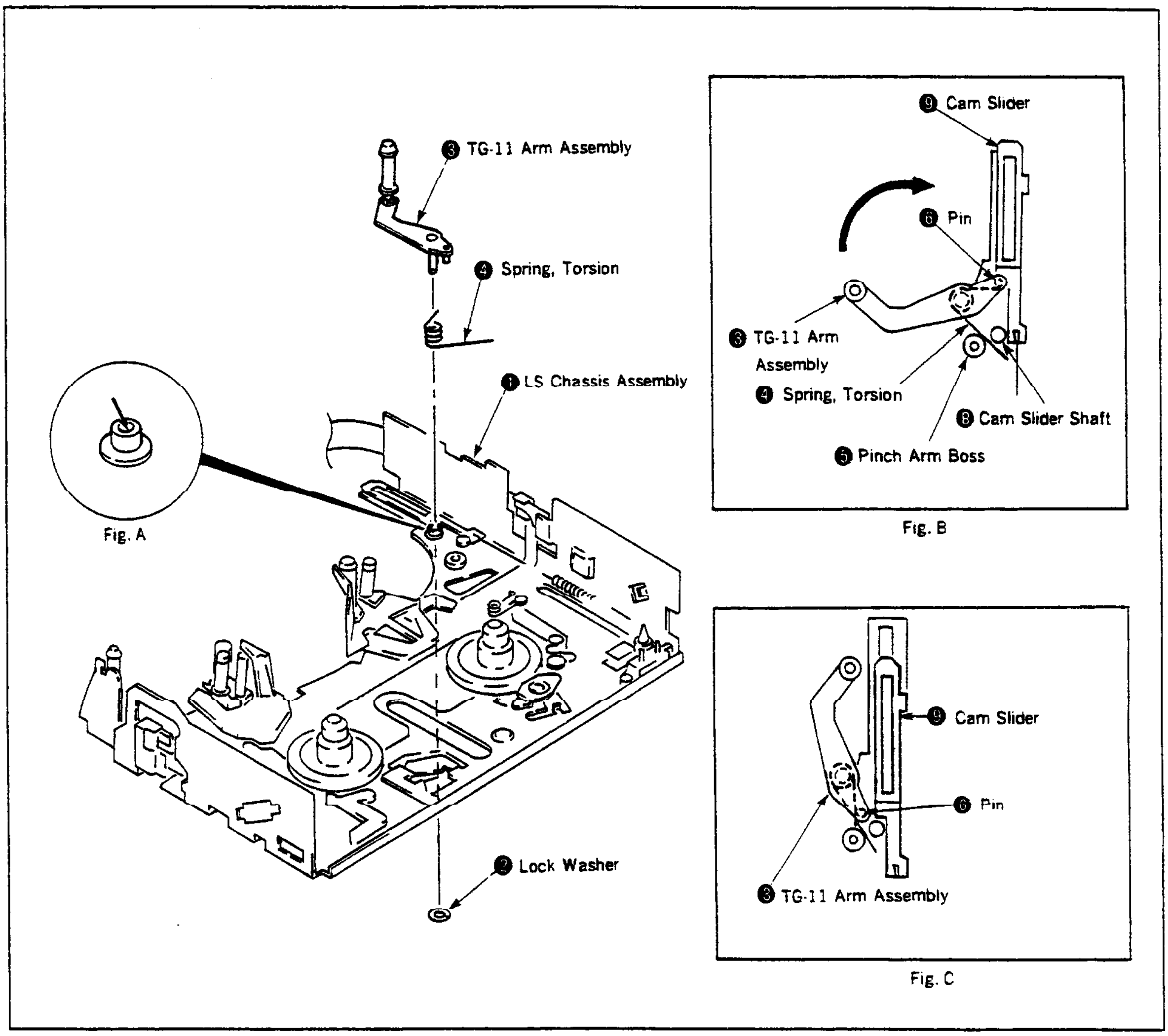

❸ TG-11 Arm Assembly
❹ Spring, Torsion
❶ LS Chassis Assembly
❷ Lock Washer
Fig. A
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly
❹ Spring, Torsion
❽ Cam Slider Shaft
❺ Pinch Arm Boss
Fig. B
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly
Fig. C

Fig. 21

3-10 TG-1 ARM ASSEMBLY (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis.
3) Referring to 3-3, remove the table assy, reel, supply.
4) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
5) Remove the spring, tension ❸. Remove the string joint ❹ from the dowel ❺ of the TG-1 adjustment block ❾ by rotating it in a direction of the arrow Ⓐ as shown in Fig. C.
6) Remove the TG-1 arm assembly ❻.

Note : Dismount and remount the string joint ❹ carefully not to deform it.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ❼ over one third of a drip up to half a drip.
2) As shown in Fig. C, mount the string joint ❹ to the TG-1 adjustment block ❾ in the opposite direction of the arrow Ⓐ.
3) Mount the TG-1 arm assembly ❻ to the boss ❼ in such a manner not to touch the guide and insert the pin ❽ into the long hole.
4) Hook the spring, tension ❸ onto the position shown in Fig. B.
5) Mount the lock washer ❷ from the back of the LS chassis assembly ❶.
6) Referring to 3-3, mount the table assy, reel, supply.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Referring to 3-27, adjust a tension regulator position.

Note : Referring to 3-28, adjust a FWD back tension.

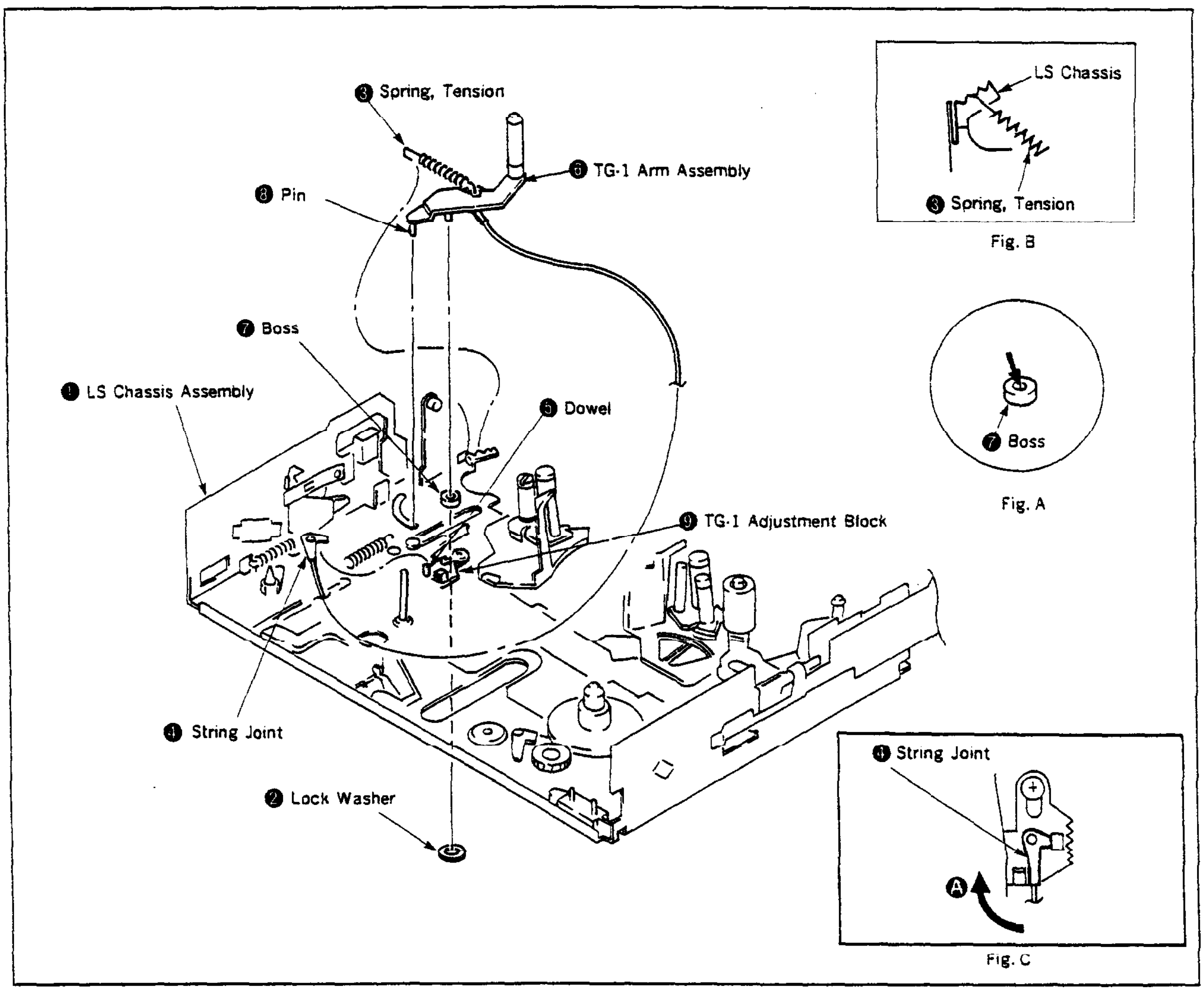

❸ Spring, Tension
❻ TG-1 Arm Assembly
❽ Pin
❼ Boss
❶ LS Chassis Assembly
❺ Dowel
❾ TG-1 Adjustment Block
❹ String Joint
❷ Lock Washer
LS Chassis
❸ Spring, Tension
Fig. B
❼ Boss
Fig. A
❹ String Joint
Ⓐ
Fig. C

Fig. 22

3-11 STRING JOINT (Fig. 23)

1. Removal

1) Referring to 3-10, remove the TG-1 arm assembly ❶.
2) Remove the joint holder ❷, and then, string assembly ❸.

2. Mounting

1) Put the dowel ❹ of the TG-1 arm assembly ❶ into the hole of the string assembly ❸ and mount the joint holder ❷. (Apply screw lock between the joint holder and TG-1 arm assembly.)
2) Referring to 3-10, mount the TG-1 arm assembly ❶.

Note : Be careful not to bend the string assembly ❸.

Note : Do not touch the guide ✱.

Note : The joint holder ❷, which was removed once, must not be used again.

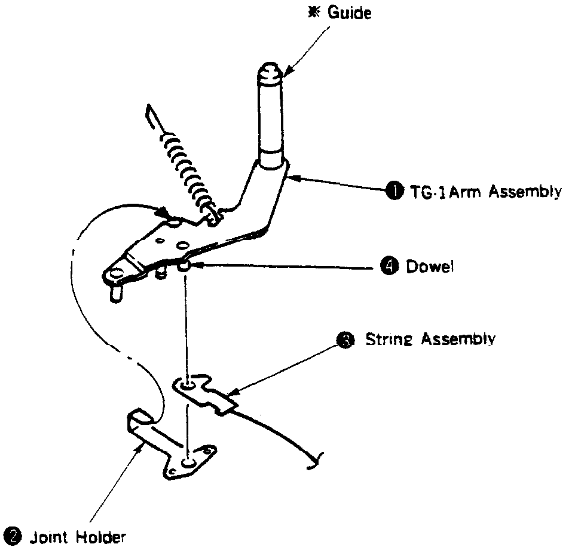

✱ Guide
❶ TG-1 Arm Assembly
❹ Dowel
❸ String Assembly
❷ Joint Holder

Fig. 23

3-12 GUIDE ARM T ASSEMBLY, GUIDE ARM S ASSEMBLY

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove *the LS chassis assembly.*
3) Rotate the guide arm T assembly ❶ and guide arm S assembly in arrow directions respectively, align their shafts ❸ with the holes as shown in Fig. A, and remove them. (Fig. 24)

Note : Do not touch the guide ✱. (Fig. 25 and Fig. 26)

2. Mounting

1) After inserting the guide arn T and S assemblies in the reverse order of removal, rotate them in the opposite directions of the *arrows respectively.*
2) Fit the TG-7 base assembly ❺ and TG-9 base assembly ❻ in the grooves of the guide rail T ❹. (Fig. 25)
3) Put the shaft ❸ flange in the long groove of the guide rail S ❽, and fit the TG-4 base assembly ❾ and TG-6 base assembly ❿ into the right and left grooves of the guide rail S ❽ respectively.
   When this is done, see to it that the flat spring of the TG-6 base assembly❿ is located below the guide rail S ❽ as shown in Fig. B. (Fig.26)
4) Referring to 3-7, mount the LS chassis assembly.
5) Referring to 1-1, mount the cassette compartment holder assembly.

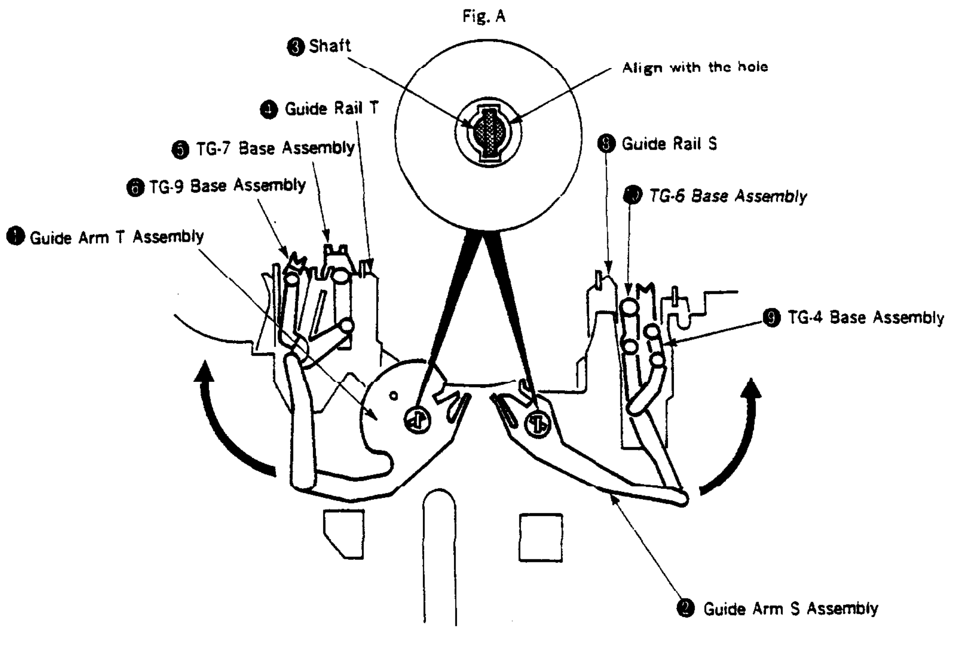


Fig. A
❸ Shaft
Align with the hole
❹ Guide Rail T
❺ TG-7 Base Assembly
❻ TG-9 Base Assembly
❶ Guide Arm T Assembly
❽ Guide Rail S
❿ TG-6 Base Assembly
❾ TG-4 Base Assembly
❷ Guide Arm S Assembly

LS Chassis Assembly Viewed from Back

Fig. 24

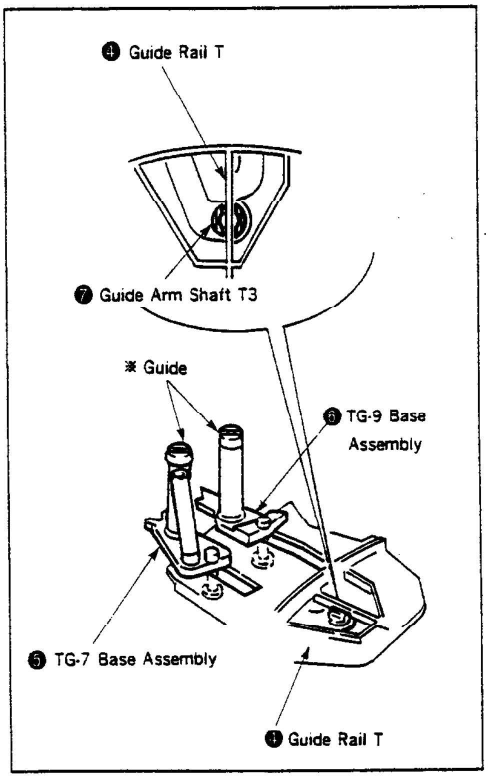

❹ Guide Rail T
❼ Guide Arm Shaft T3
※ Guide
❻ TG-9 Base Assembly
❺ TG-7 Base Assembly
❹ Guide Rail T

Fig. 25

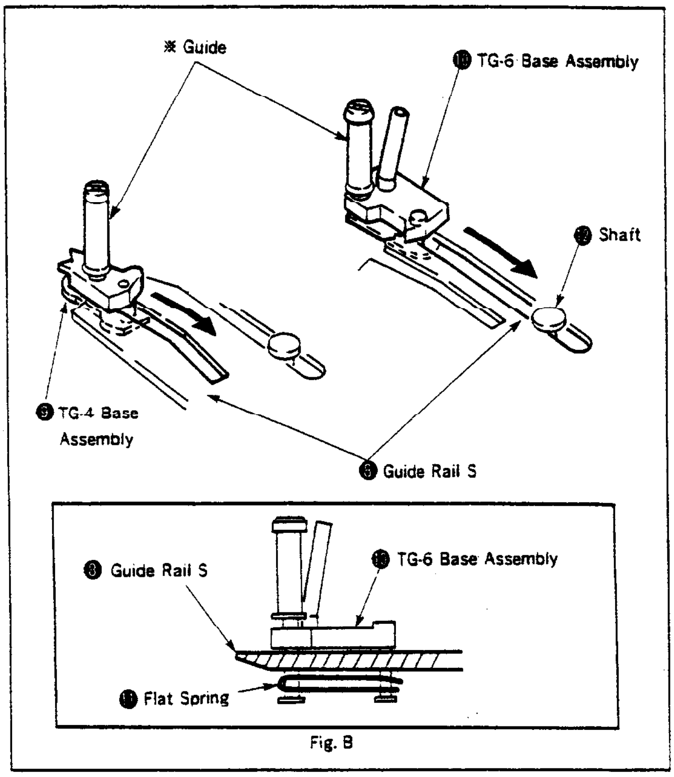

※ Guide
⓾ TG-6 Base Assembly
⓬ Shaft
❾ TG-4 Base Assembly
❽ Guide Rail S
❽ Guide Rail S
⓾ TG-6 Base Assembly
⓫ Flat Spring

Fig. B

Fig. 26

13 PINCH PRESS ARM ASSEMBLY (Fig. 27)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-7, remove the LS chassis.

Remove the screw ❶, and then, pinch press arm assembly ❷.

2. Mounting

1) As shown in A, apply half a drip of molyton grease to an arrowindicated part of a boss hole.
2) As shown in Fig. B, apply half a drip of molyton grease each to the pinch press arm assembly ❷ at 3 places.
3) Put the pin ❹ of the pinch press arm assembly ❷ in the groove of the cam B ❸.
4) Fix. with the screw ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

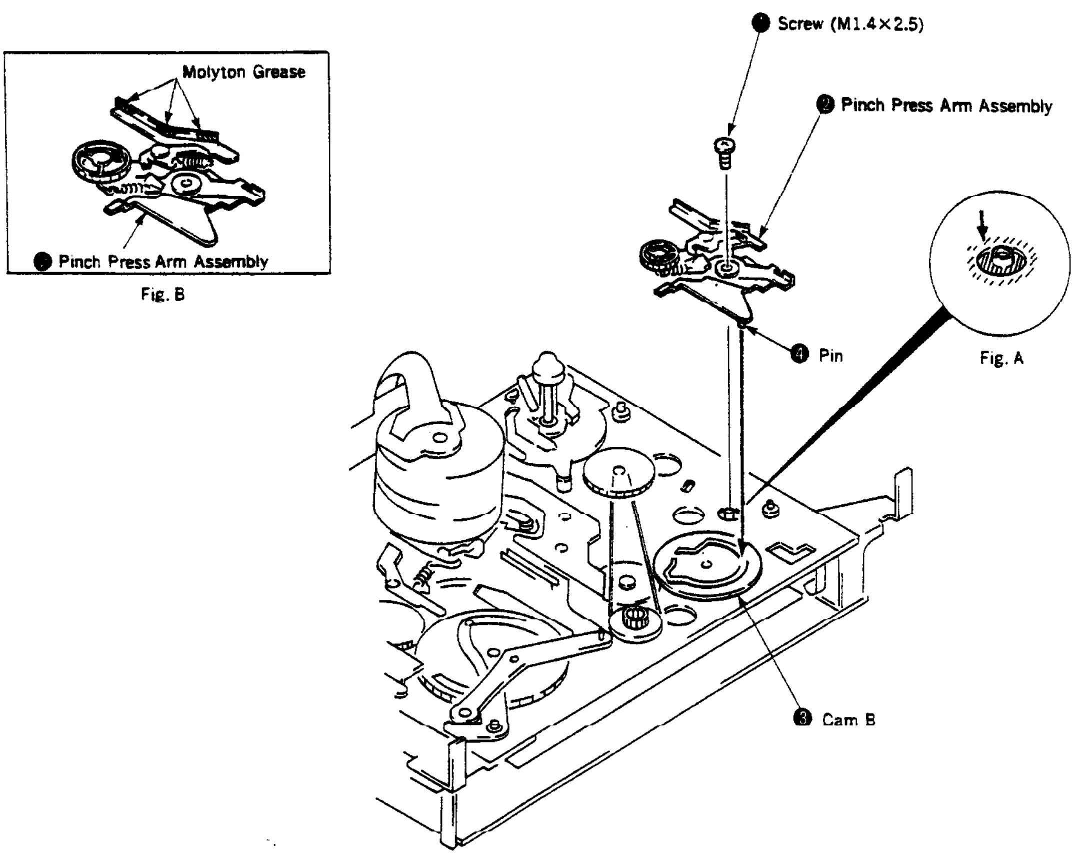

Molyton Grease
❷ Pinch Press Arm Assembly
Fig. B
❶ Screw (M1.4×2.5)
❷ Pinch Press Arm Assembly
❹ Pin
Fig. A
❸ Cam B

Fig. 27

3-14 GL SLIDER ASSEBLY (Fig. 28)

1. Removal

1) Refering to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Referring to 3-15, remove the cam A.
4) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
5) Remove the screw ❶, and then, GL support S ❷.
6) Remove the lock washer ❸, and then, GL slider assembly ❹.

2. Mounting

1) Fit the claw ❺ of the GL slider assembly ❹ in the qroove of the GL support T ❼, and put the roller ❻ in the long hole of the chassis.
2) Stop with the lock washer ❸.
3) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
4) Fit the claw ❽ of the GL support ❷ in the part of the chassis marked with ⋇ and place the dowel ❾ in the hole of the chassis.
5) Fix with the screw ❶.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 1-1, mount the cassette compartment holder assembly.

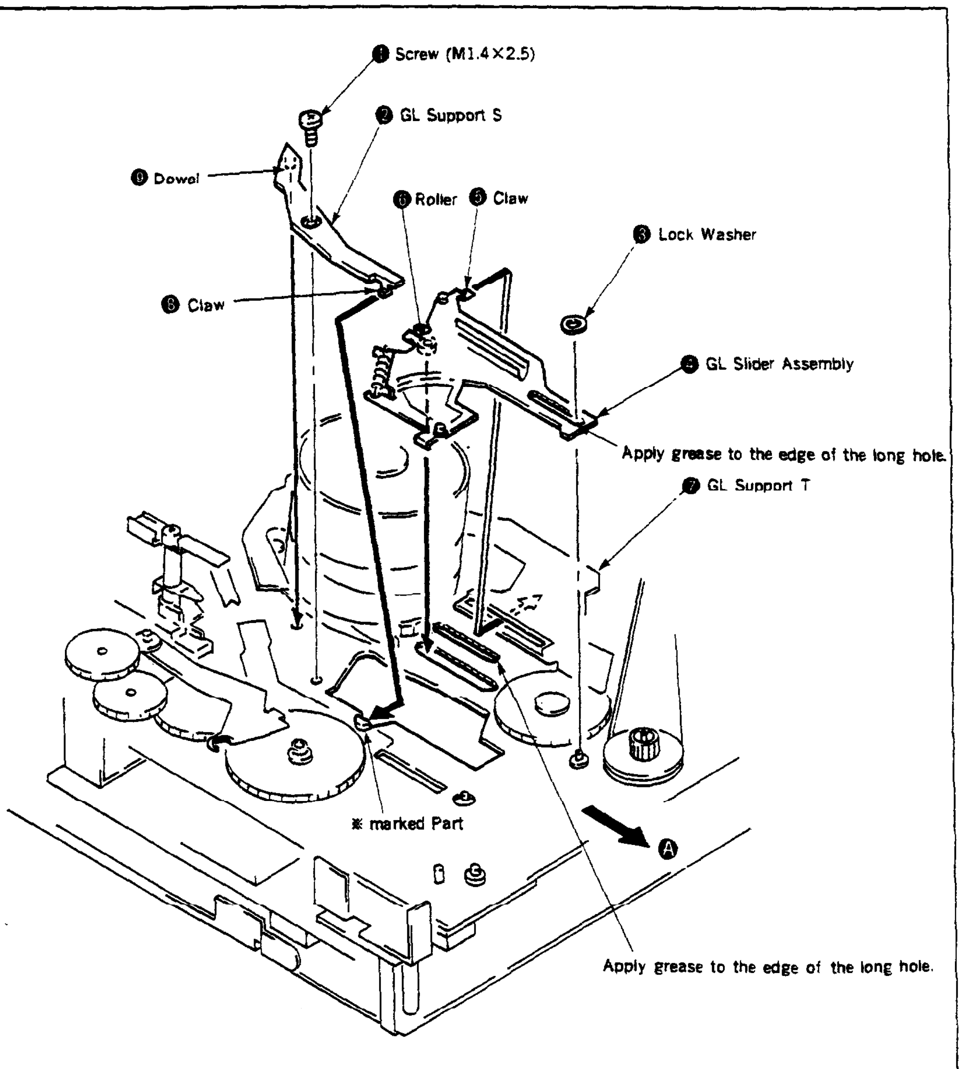

❶ Screw (M1.4×2.5)
❷ GL Support S
❾ Dowel
❻ Roller ❺ Claw
❸ Lock Washer
❽ Claw
❹ GL Slider Assembly
Apply grease to the edge of the long hole.
❼ GL Support T
⋇ marked Part
Ⓐ
Apply grease to the edge of the long hole.

Fig. 28

3-15 PHASE ADJUSTMENT(Fig. 29)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis. (Wen this is done, one of the BLANK, REC and READY modes must be selected.)
3) Remove the two screws ❶, and remove the TG-1 cam base ❷ by moving it in a direction of the arrow Ⓐ. (Remove the notch ● from the groove of the No. 3 gear shaft.)
4) Remove the screw ❸, and remove the gear retainer ❹ by sliding it in a direction of the arrow Ⓑ.
5) Remove the arm assembly ❺, No. 0 gear ❻, No. 1 gear assembly ❼, No. 2 gear assembly ❽, No. 3 gear assembly ❾, lock washer ●, and then, mode gear assembly ●, respectively.
6) Being careful not to lose the LS roller ● of the LS arm, remove the LS arm assembly ● and EJ arm ⓬, respectively.
7) Remove the screw ●, and then, cam A ●.
8) Referring to 3-13 3), remove the pinch press arm assembly.
9) Remove the screw ●, and then, cam B ●.

2. Adjustment and Mounting

1) Face the hole ⓐ of the mode gear assembly ● to a direction of the arrow Ⓐ, move the GL slider assembly ● in a direction of the arrow Ⓑ, apply molyton grease to the pin of the GL slider assembly ●, and mount the LS roller ●. (Fig. 30)
2) Set a direction of the cam A ● so that the hole ⓒ of the cam A ● will be aligned with the hole of the mechanical chassis. (Fig. 31)
3) Move the GL slider ● so that the LS roller ● will be placed into the groove ⓓ of the cam A ●. At the same time, engage the mode gear assembly ● with the gear of the relay gear A ●, and mount the cam A ●. Insert a stick of about ϕ1.5mm in the hole ⓒ of the cam A ●. (Fig. 31)
4) Align the hole ⓔ of the cam B ● with the hoie of the mechanical chassis. At the same time, engage the relay gear B ● with the gear and mount it. (Fig. 32)
5) Referring to 3-13, mount the pinch press arm assembly.
6) Align the hole ⓕ of the No. 3 gear assembly ❾ with the hole of the mechanical chassis, and at the same time, engage the mode gear assembly ● with the gear to mount. (Fig. 33)
7) Mount the No. 2 gear assembly ❽, No. 1 gear assembly ❼ and No. 0 gear ❻ in that order. Mount the arm assembly ❺ to the shaft and put the pin ● in the groove of the No. 3 gear assembly ❾, (Fig. 34)
8) Put the TG-1 cam base ❷ in place, fit the notch ● to the shaft and shift it in an arrow direction, and mount the screws ❶ and ❶ in that order. (Fig. 35)
9) Put the gear retainer ❹ in place, slide it in an arrow direction and fix it with the screw ❸. (Fig. 36)
10) Seeing to it that the EJ arm ⓬ and the LS roller ● of the LS arm assembly ● are put in the groove ⓖ of the cam A ●, mount them in that order. (Fig. 29 and Fig. 30)
11) Referring to 3-7, mount the LS chassis assembly.
12) Referring to 1-1, mount the cassette compartment holder assembly.

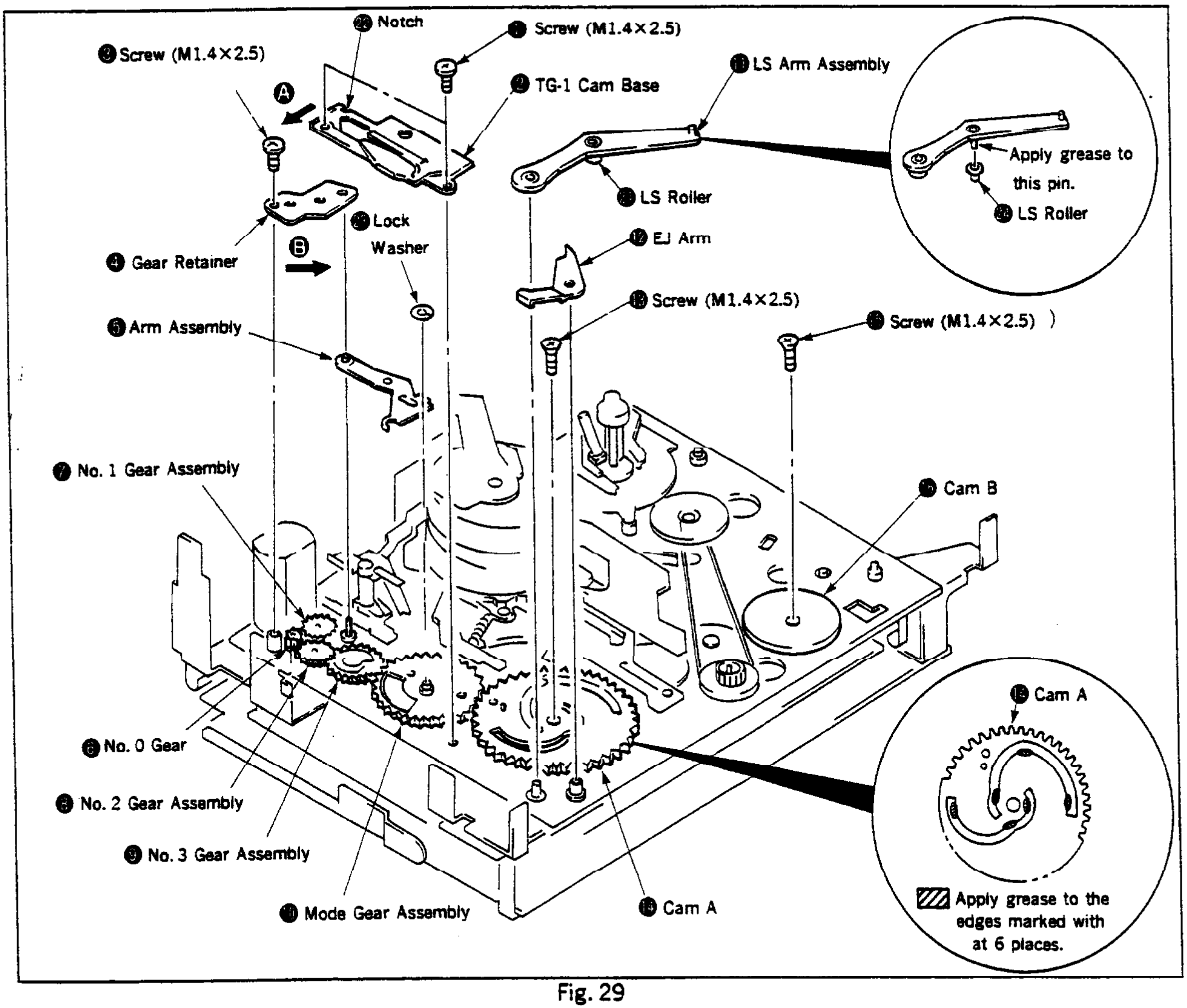

● Notch
❶ Screw (M1.4×2.5)
❸ Screw (M1.4×2.5)
Ⓐ
❷ TG-1 Cam Base
● LS Arm Assembly
Apply grease to this pin.
● LS Roller
● LS Roller
● Lock Washer
❹ Gear Retainer
Ⓑ
⓬ EJ Arm
● Screw (M1.4×2.5)
● Screw (M1.4×2.5)
❺ Arm Assembly
❼ No. 1 Gear Assembly
● Cam B
● Cam A
❻ No. 0 Gear
❽ No. 2 Gear Assembly
❾ No. 3 Gear Assembly
● Mode Gear Assembly
● Cam A
▨ Apply grease to the edges marked with at 6 places.

Fig. 29

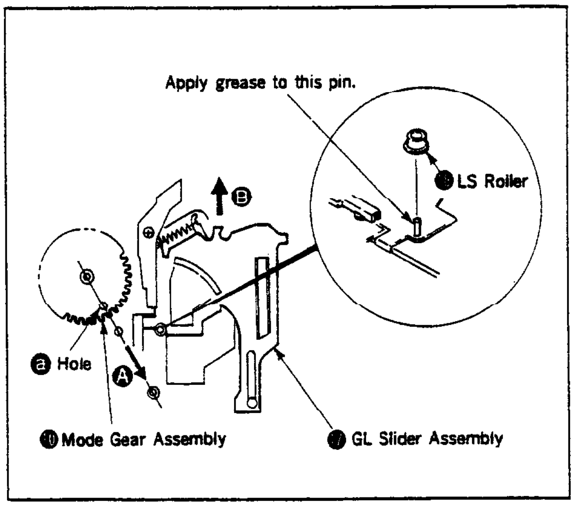

Apply grease to this pin.
⑲ LS Roller
Ⓑ
ⓐ Hole
Ⓐ
⑩ Mode Gear Assembly
⑰ GL Slider Assembly

Fig. 30

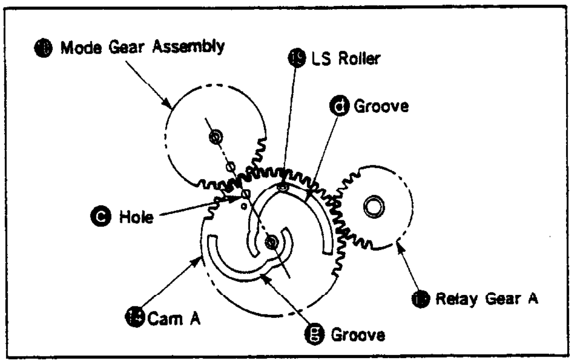

⑩ Mode Gear Assembly
⑲ LS Roller
ⓓ Groove
ⓒ Hole
⑬ Relay Gear A
⑭ Cam A
ⓑ Groove

Fig. 31

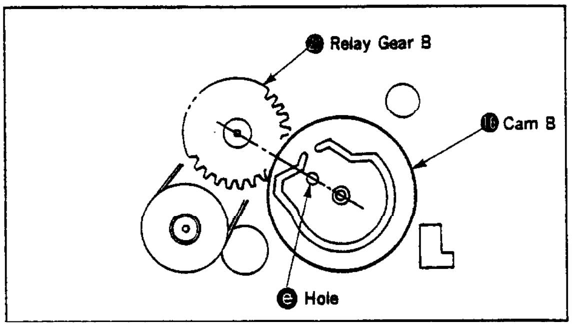

⑳ Relay Gear B
⑯ Cam B
ⓔ Hole

Fig. 32

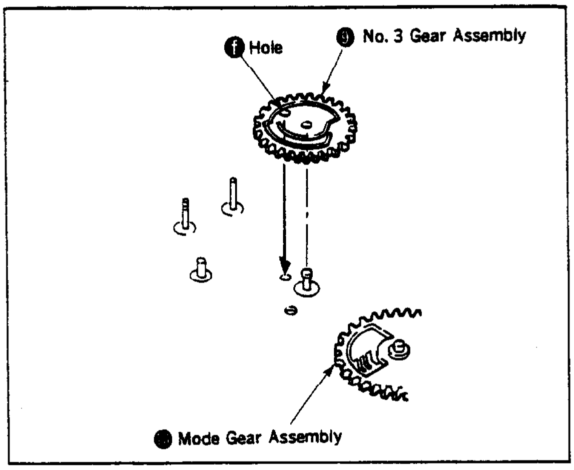

ⓕ Hole
⑨ No. 3 Gear Assembly
⑩ Mode Gear Assembly

Fig. 33

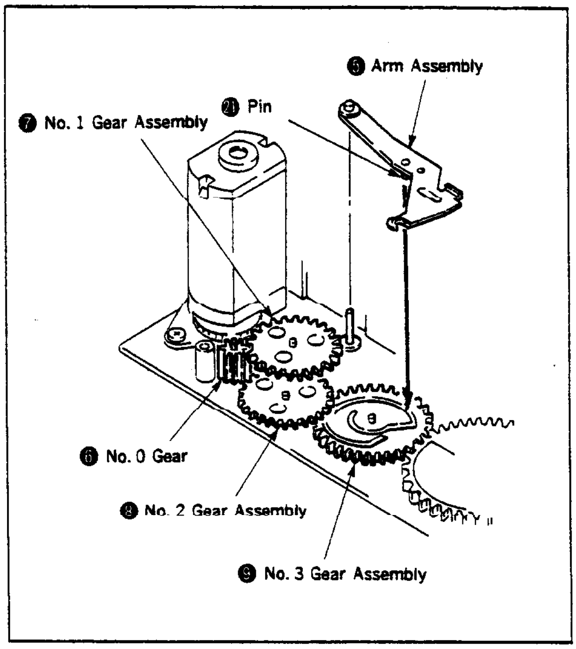

⑤ Arm Assembly
㉑ Pin
⑦ No. 1 Gear Assembly
⑥ No. 0 Gear
⑧ No. 2 Gear Assembly
⑨ No. 3 Gear Assembly

Fig. 34

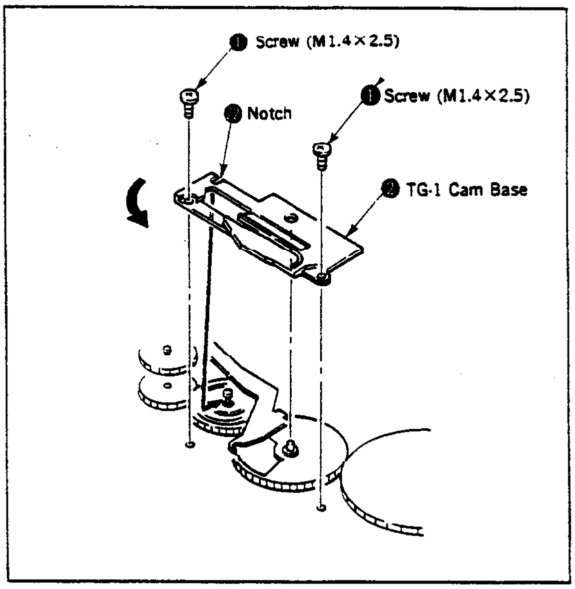

① Screw (M1.4×2.5)
ⓑ Notch
① Screw (M1.4×2.5)
② TG-1 Cam Base

Fig. 35

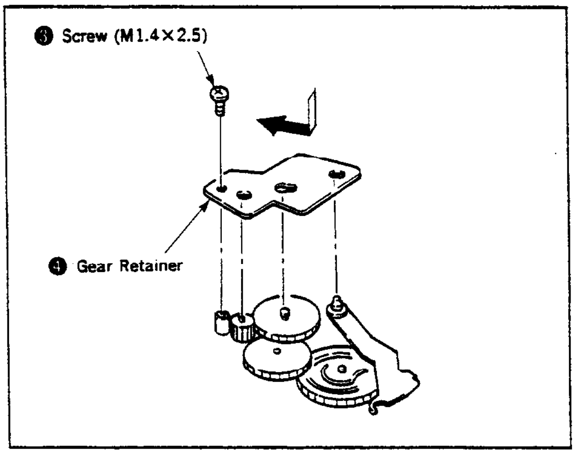

③ Screw (M1.4×2.5)
④ Gear Retainer

Fig. 36

.6 GEAR TRAIN OPERATION CHECK (Fig. 37)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-7, remove the LS chassis.

Referring to 3-17, remove the loading motor.

Check

Insert the tip of tweezers into the hole a of the cam A ❶.

Rotate the cam A ❶ by about two thirds of a turn in a direction of the arrow Ⓐ, and then, in a direction of the arrow Ⓑ by the same amount. Repeat this 3 times.

When this is done, check that each, gear, the CL slider assembly and LS arm assembly rotate smoothly, and that no load is applied to them.

4) At the same time, check that the LS roller ❷ is located almost at the end point of the groove of the cam A ❶ when the gear train comes into contact with the stoppers at both ends.

Note : When rotating the cam A ❶ with the tip of tweezers, etc., be careful not to scratch the mechanical chassis.

3. Mounting

1) Referring to 3-17, mount the loading motor.
2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 1-1, mount the cassette compartment holder assembly.

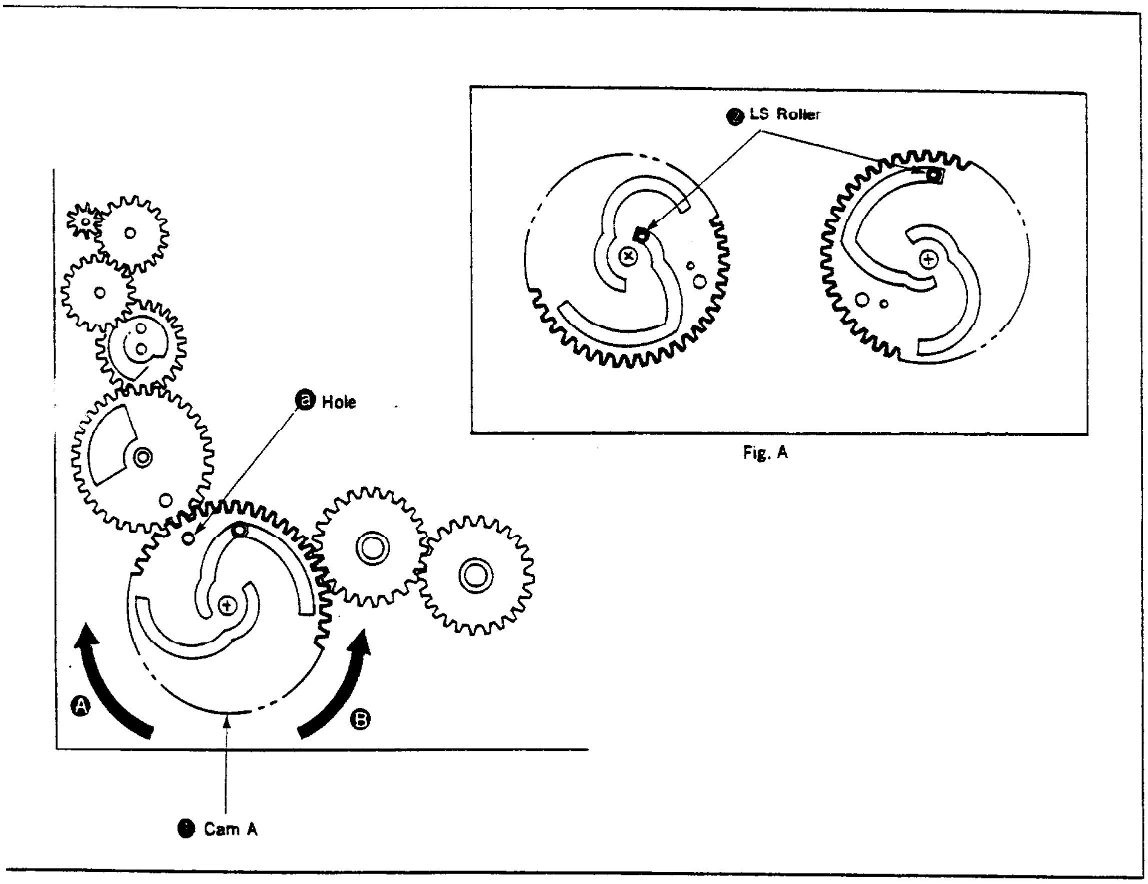


Fig. 37

3-17 LOADING MOTOR ASSEMBLY (Fig. 38)

1. Removal

1) Remove the LB-12 board.
2) Remove the connector ❶.
3) Remove the screws ❷ and ❸, and remove the loading motor assembly ❹ in an arrow direction.

2. Mounting

1) Put the pin ❺ of the loading motor assemmbly ❹ in the hole of the mechanical chassis, and mount it with the screws ❷ and ❸ in that order.
2) Mount the connector ❶.
3) Mount the LB-12 board.

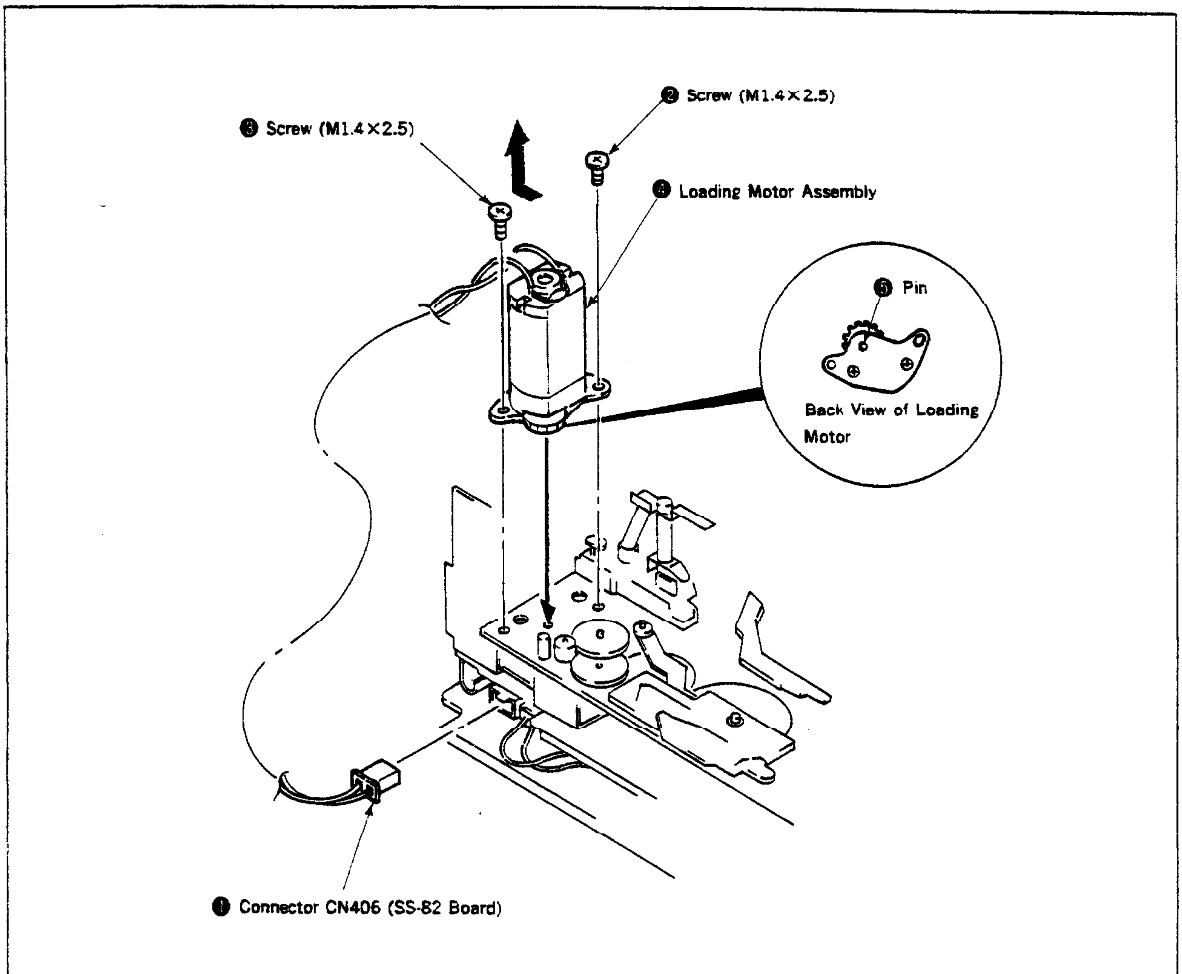

❷ Screw (M1.4×2.5)
❸ Screw (M1.4×2.5)
❹ Loading Motor Assembly
❺ Pin
Back View of Loading Motor
❶ Connector CN406 (SS-82 Board)

Fig. 38

3-18 GUIDE RAIL BASE 1 ASSEMBLY (Fig. 39)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Unskate the LS chassis a little.
3) Remove the two screws ●, and then, guide rail base 1 assembly ●.

Note : Be careful not to lose the spacers inserted in the parts ⓐ and ⓑ of the guide rail base 1 assembly ●. (Fig. B)

2. Mounting

1) Apply half a drip each of molyton grease at 2 places on the back of the guide rail base 1 assembly. (Fig. A)
2) Put the pin ● of the guide rail base 1 assembly ● in the notch of the chassis, and tighten the two screws ● with a torgue of 0.6kg•cm.
3) Referring to 1-1, mount the cassette compartment holder assembly.

Note1 : Mount paying attention to the number of spacers inserted and their locations.

Note2 : When tightening the screws, be careful not to bend the TG-2 upper flange ● with a screwdriver bit.

Note3 : Note that the part c of the guide rail base 1 assembly is easily broken. (Fig. B)

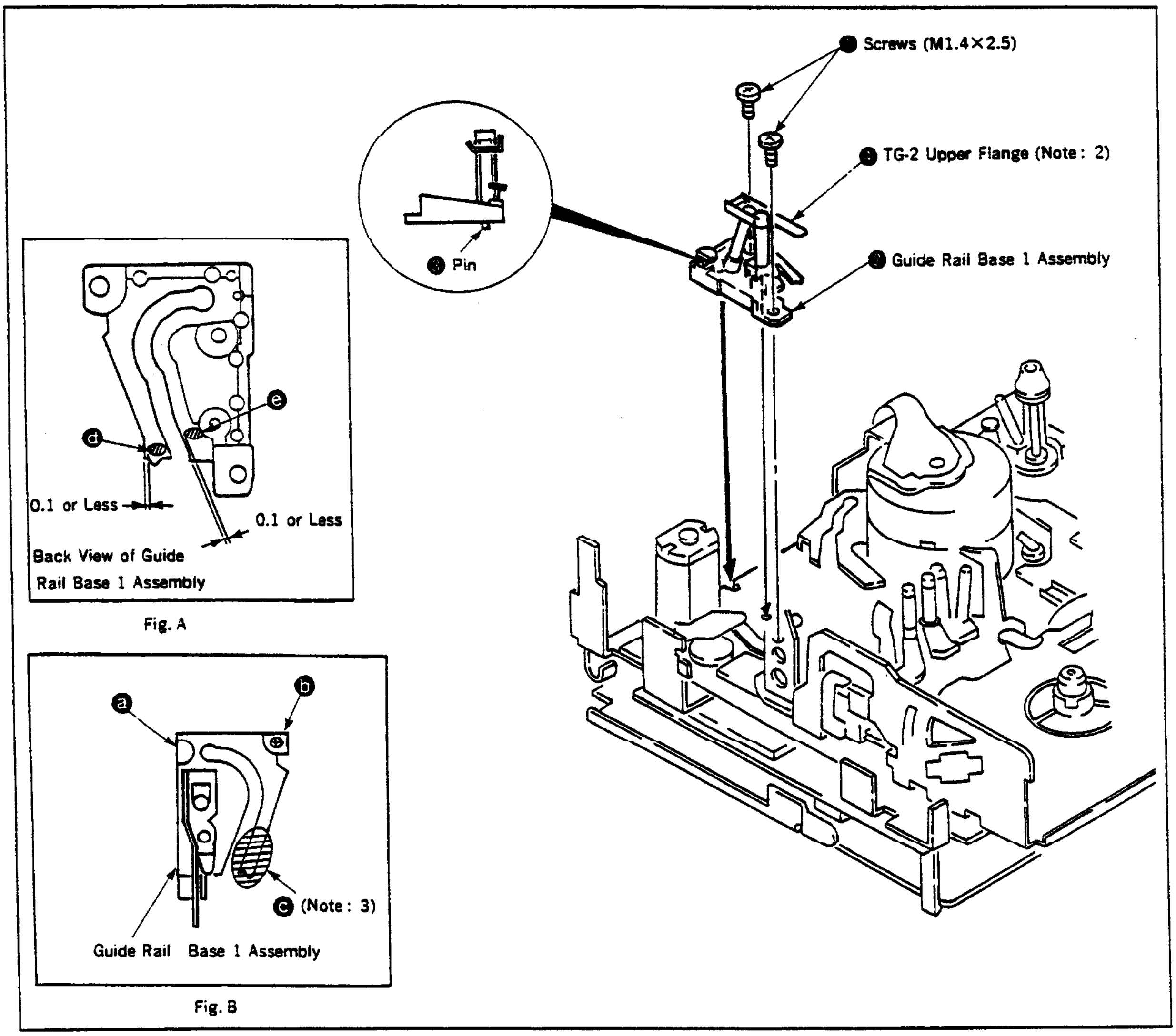

● Screws (M1.4×2.5)
● TG-2 Upper Flange (Note: 2)
● Guide Rail Base 1 Assembly
● Pin
ⓔ
ⓓ
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 1 Assembly
ⓐ
ⓑ
ⓒ (Note: 3)
Guide Rail Base 1 Assembly

Fig. A

Fig. B

図39.

3-19 GUIDE RAIL BASE 2 ASSEMBLY (Fig. 40)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to the Service Manual, open the board in the back of the mechanical chassis.
3) Remove the four screws ●, and then, frame B assembly ● in a direction of the arrowⒶ.
4) Unskate the LS chassis a little.
5) Remove the two screws ●, and then, guide rail base 2 assembly ● in a direction of the arrowⒷ.

Note : Be careful not to hit the drum with a screwdriver bit because the screws are located closed to a drum lead.

2. Mounting

1) Apply half a drip of molyton grease each to 4 places on the back of the guide rail base 2 assembly. (Fig. A)
2) As shown in Fig. B, apply the striking parts of the guide rail base 2 assembly ● to the lower drum, and slide in an arrow direction to fit.
3) Pushing the part ＊ of the guide rail base 2 assembly ● lightly in a direction of ⓔ (Fig. B), tighten the two screws ● with a torque of 0.8kg•cm.

Note : Note that the part f is easily broken.

4) Mount the frame B assembly with the four screws ●.
5) Mount the opened board to the back of mechanical chassis.
6) Referring to 1-1, mount the cassette compartment holder assembly.

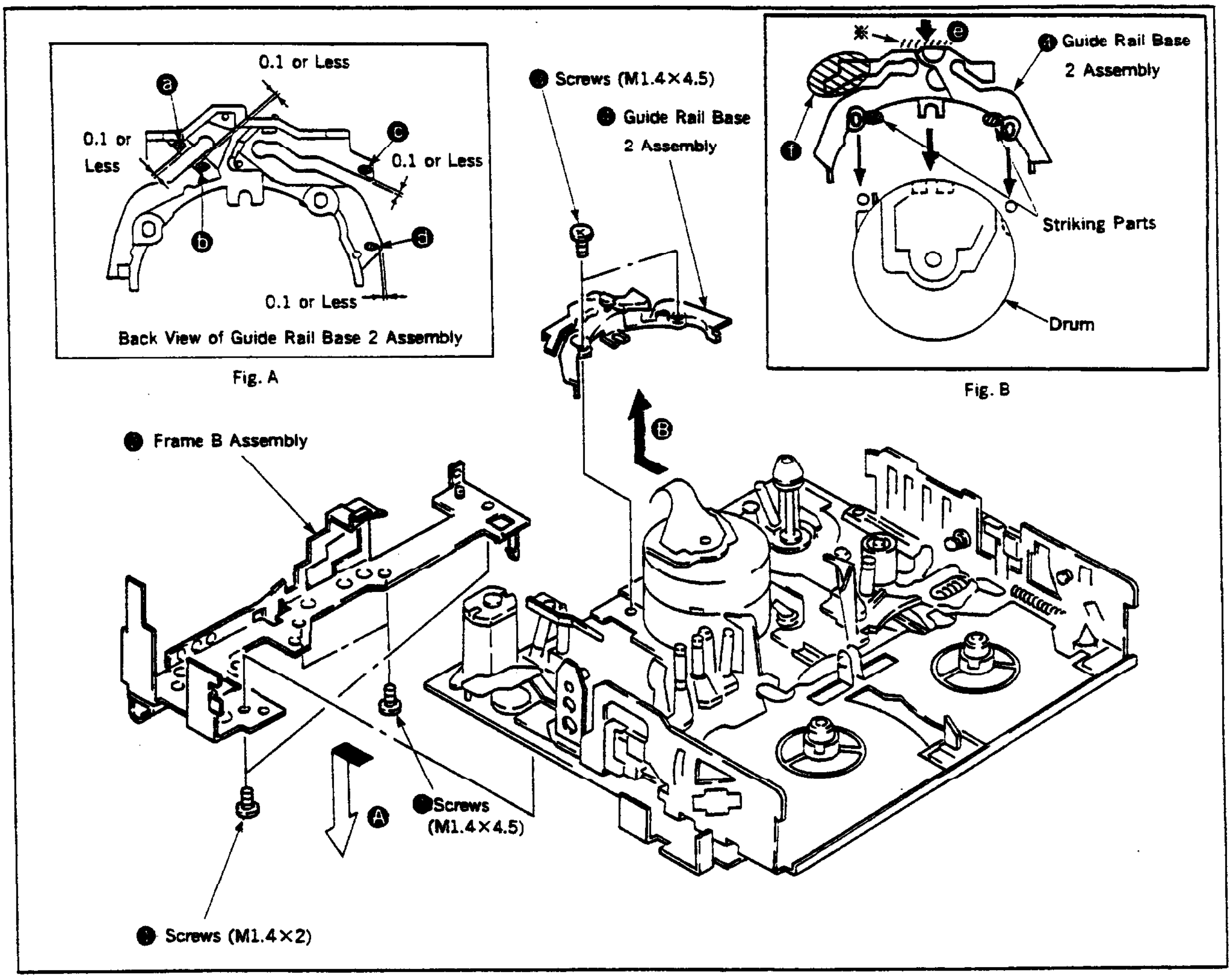

0.1 or Less
ⓐ
0.1 or Less
ⓒ
0.1 or Less
ⓑ
ⓓ
0.1 or Less
Back View of Guide Rail Base 2 Assembly
● Screws (M1.4×4.5)
● Guide Rail Base 2 Assembly
＊
ⓔ
● Guide Rail Base 2 Assembly
ⓕ
Striking Parts
Drum
● Frame B Assembly
Ⓑ
Ⓐ
●Screws (M1.4×4.5)
● Screws (M1.4×2)

Fig. A

Fig. B

Fig. 40

3-20 GUIDE RAIL BASE 3 ASSEMBLY (Fig. 41)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the flexible rotatry shaft ●.
3) Remove the two screws ●. Remove the guide rail base 3 assembly ● in an arrow direction, seeing to it that it does not hitch on the capstan housing.

Note : Handle the ※ marked part carefully because it is easily broken.

2. Mounting

1) Apply half a drip of molyton grease each to 2 places on the back of the guide rail base 3 assembly ●. (Fig. A)
2) Mount the guide rail base 3 assembly ●, seeing to it that it does not hitch on the capstan housing.
3) Tighten the two screws ● with a torque of 0.6kg•cm.
4) Mount the flexible rotary shaft ●.
5) Referring to 1-1, mount the cassette compartment holder assembly.

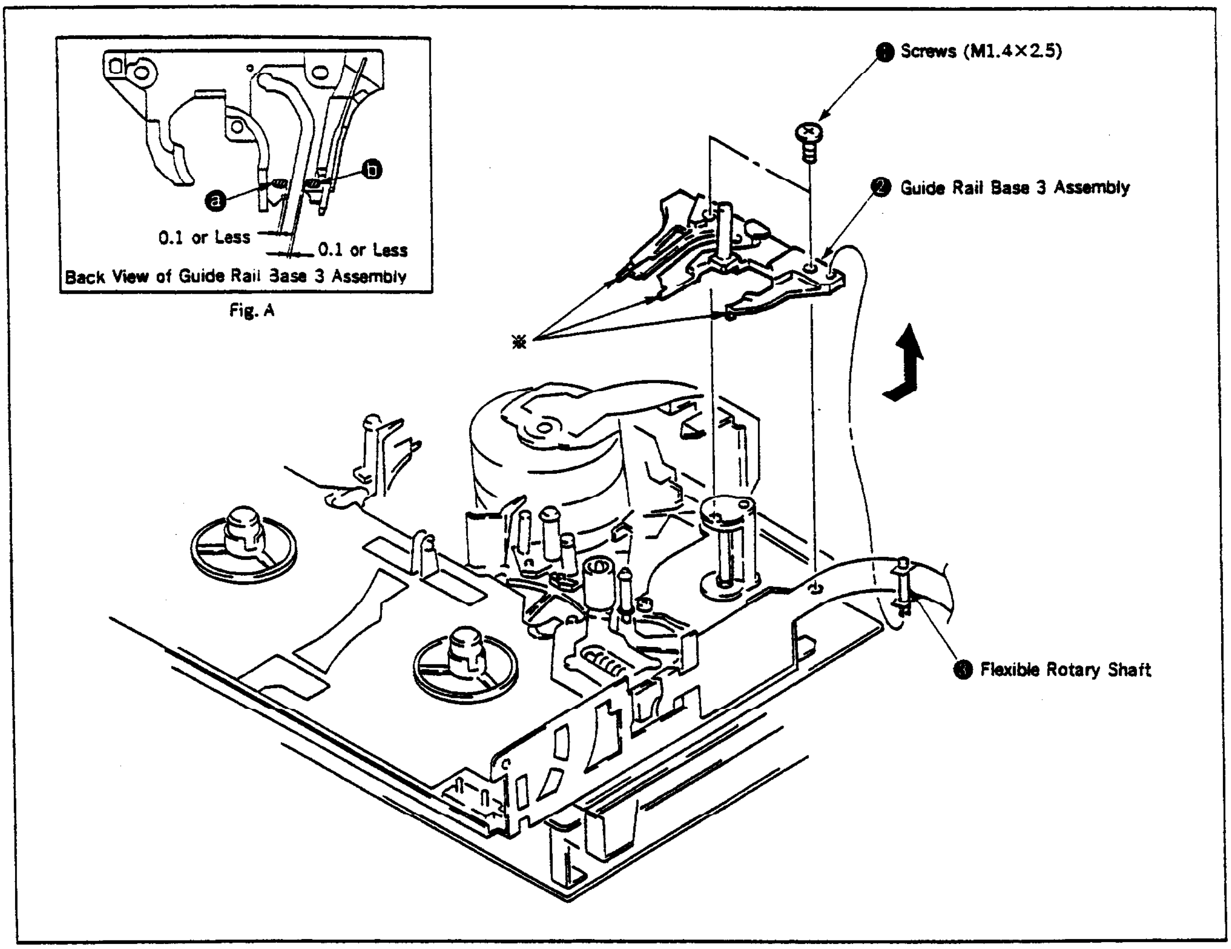

ⓐ
ⓑ
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 3 Assembly
Fig. A
❶ Screws (M1.4×2.5)
❷ Guide Rail Base 3 Assembly
※
❸ Flexible Rotary Shaft

Fig. 41

3-21 CAPSTAN MOTOR ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-20, remove the guide rail base 3 assembly.
3) Remove the connector ❷ of the capstan motor assembly ❶.
4) Remove the screw ❸. Disengaging the gear of the conversion gear assembly ❹, remove the capstan motor assembly ❶ in an arrow direction (obliquely).

2. Mounting

1) As shown in Fig. A, incline the capstan motor assembly ❶ to engage the gear of the capstan motor assembly ❶ with that of the conversion gear assembly ❹, and tighten the screw 3 with a torque of 1kg•cm.
When this is done, be careful not to damage the gear of the conversion gear assembly ❹.
2) Mount the connector 2 to the capstan motor assembly ❶.
3) Referring to 3-20, mount the guide rail base 3 assembly.
4) Referring to 1-1, mount the cassette compartment holder assembly.

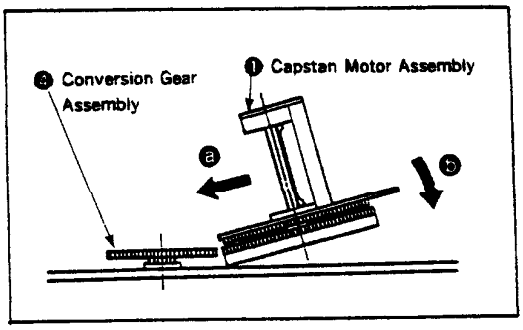

❹ Conversion Gear Assembly
❶ Capstan Motor Assembly
ⓐ
ⓑ

Fig. A

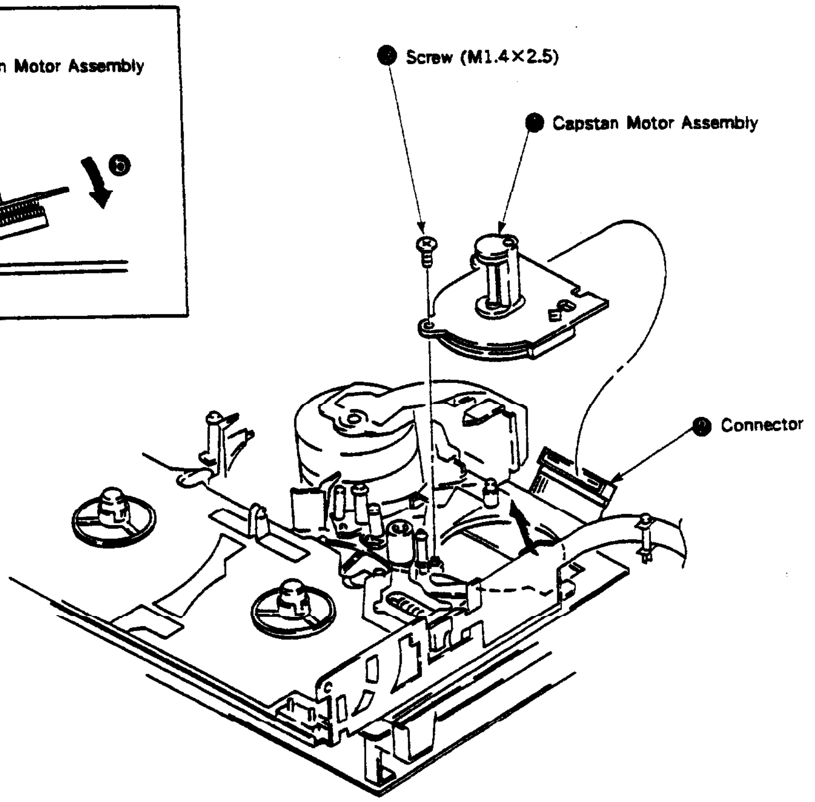

❸ Screw (M1.4×2.5)
❶ Capstan Motor Assembly
❷ Connector

Fig. 42

3-22 DRUM BASE ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ❶ from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the two screws ❷.
5) Draw out the head flexible board ❸ carefully from the hole of the mechanical chassis not to damage it, and remove the drum base assembly.

2. Mounting

1) Put the head flexible board ❸ in the hole of the mechanical chassis and put the positioning pins ❹ of the drum base in the holes of the mechanical chassis.
2) Tighten the two screws ❷ with a torque of 0.8kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ❶ to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

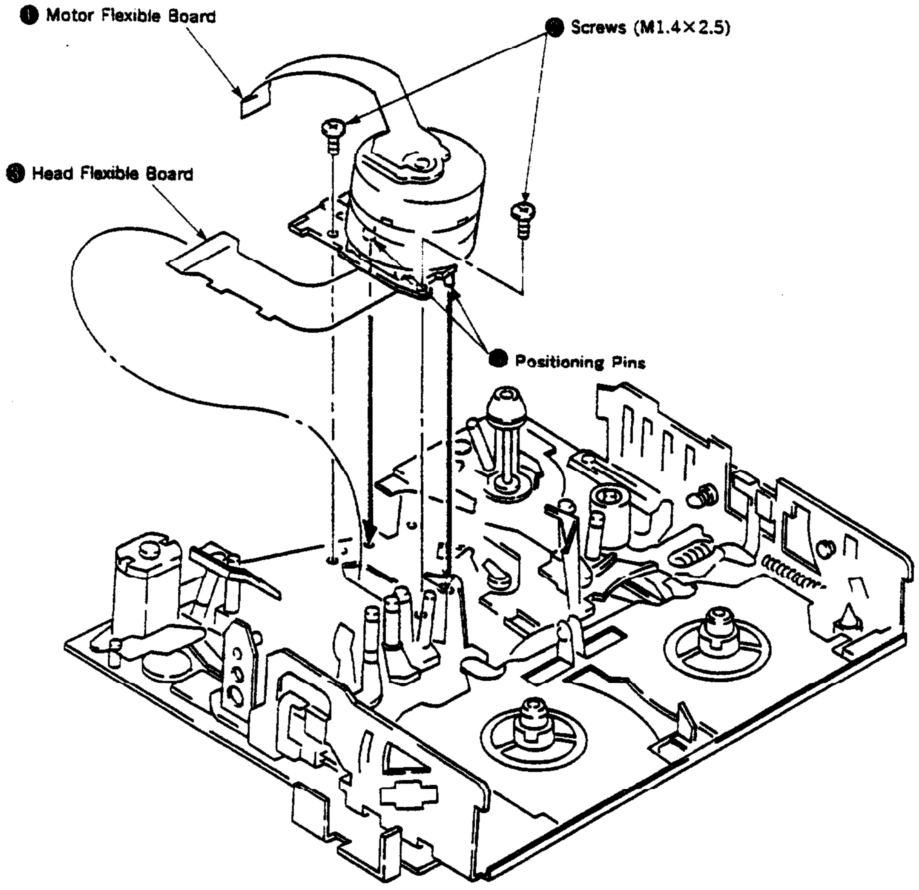


Fig. 42

3-23 DRUM ASSEMBLY (Fig. 43)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ❶ from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the three screws ❷ from the back of the mechanical chassis.
5) Draw out the head flexible board ❸ carefully from the hole of the mechanical chassis not to damage it, and remove the drum assembly ❹.

2. Mounting

1) Put the head flexible board ❸ in the hole of the mechanical chassis, and mount it so that the pins ⓑ and ⓓ will be put in the holes ⓐ and ⓒ shown in Fig. A.
2) Tighten the three screws ❷ with a torque of 0.5kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ❶ to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

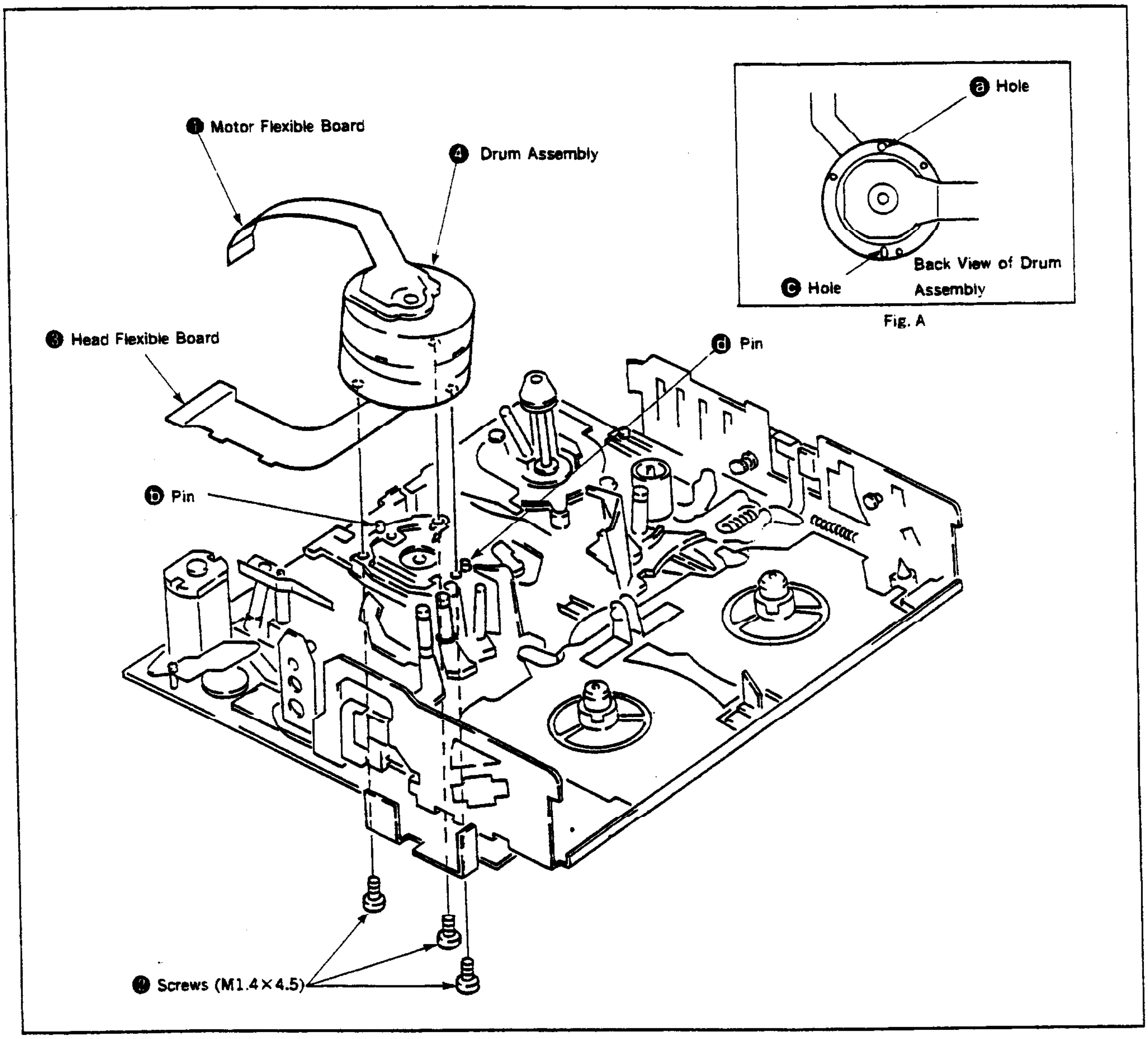
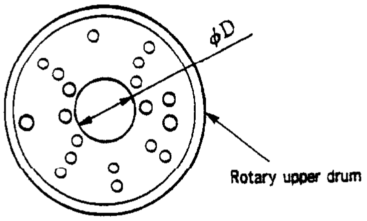

ⓐ Hole
❶ Motor Flexible Board
❹ Drum Assembly
Back View of Drum Assembly
ⓒ Hole
Fig. A
❸ Head Flexible Board
ⓓ Pin
ⓑ Pin
❷ Screws (M1.4×4.5)

Fig. 43

3-24 Replacement of Rotary Upper Drum Assembly

There are two rotary upper drum assembly types, depending on a color mark. (Fig. A in Fig. 45)



NTSC:

A-7049-190-A	Rotary upper drum assembly DGR-32-R-(1)
A-7049-189-A	Rotary upper drum assembly DGR-32-R-(2)

PAL:

A-7049-197-A	Rotary upper drum assembly DGR-37-R-(1)
A-7049-198-A	Rotary upper drum assembly DGR-37-R-(2)

Manufacturing upper dram

RANK	ϕD	MARK	
A	$\phi 8^{+0.0015}_{+0.001}$	Green	−01
B	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	
C	$\phi 8^{+0.0005}_{0}$	Black	
D	$\phi 8^{0}_{-0.0005}$	Black, Brown	
E	$\phi 8^{-0.0005}_{-0.001}$	Red	−11
F	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	
G	$\phi 8^{-0.0015}_{-0.002}$	Blue	
H	$\phi 8^{-0.002}_{-0.0025}$	Blue, Brown	

➡

Repairing upper drum

SUFFIX	ϕD	REMARKS	DRUM UPPER
−01	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	NTSC DGR-32-R-(1) PAL DGR-37-R-(1)
	$\phi 8^{+0.0005}_{0}$	Black	
−11	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	NTSC DGR-32-R-(2) PAL DGR-37-R-(2)
	$\phi 8^{-0.0015}_{-0.002}$	Blue	

1. Removal

1) Referring to 3-23, remove the drum assembly.
2) Remove the two screws ●. (Fig. 44)
3) Hold the outlet (base) of the guide protector ●, lift it up obliquely. In that state, hold the outer figure of the back yoke ● and remove it. (Fig. 44)

Note : Note that the flexible board and guide protector ● easily come off position because they are only pasted.

4) As shown in Fig. A, set the rotor earth spring ● around spring hook. (Fig. 44)
5) Using a drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ●, and then, rotary upper drum assembly ●. (Fig. 45)
6) Using the drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ●, and then, rotor ●. (Fig. A in Fig. 45)

2. Mounting

1) Clean the flange surface● and the surface of the rotary upper drum assembly ● which comes into contact with it, and make sure that there is no dust or scratch. (Fig. 45)
2) Adjust a direction of the upper drum so that the head contact mold pin● will be put in the reference hole of the rotary upper drum assembly ●, and push it in lightly. (Fig. 45)

Note : Check visually that the clearance between the upper and lower drums is about 0.05mm.

3) Using the drum screwdriver (Ref. No. J-11), tighten the two hexagon socket bolts ● (800g·cm) and rotate it with finger to make sure that there is no abnormality. (Fig. 45)
4) Put the pin ● of the rotor ● in the hole of the rotary upper drum assembly. Using the drum screwdriver (Ref. No. J-11), tighten the hexagon socket bolts ●. (800g·cm) (Fig. A in Fig. 45)
5) Remove the rotor earth spring ● from the spring hook. Using tweezers, etc., hook it onto the groove of the stator boss●. (Fig. B in Fig. 45)

Note : See to it that the rotor earth spring ● is not located in the gap between the flange and stator.

6) Hold the outer figure of the back yoke ●, put it on the inner step of the upper drum and insert the other side slowly. (Fig. B in Fig. 44)
7) Tighten the two screws ●. (500g·cm) (Fig. 44)
8) Rotate the upper drum with finger to check that it runs smoothly.
9) Referring to 3-23, mount the drum assembly.

Note : After mounting, be sure to make tape path adjustment in Section 4.

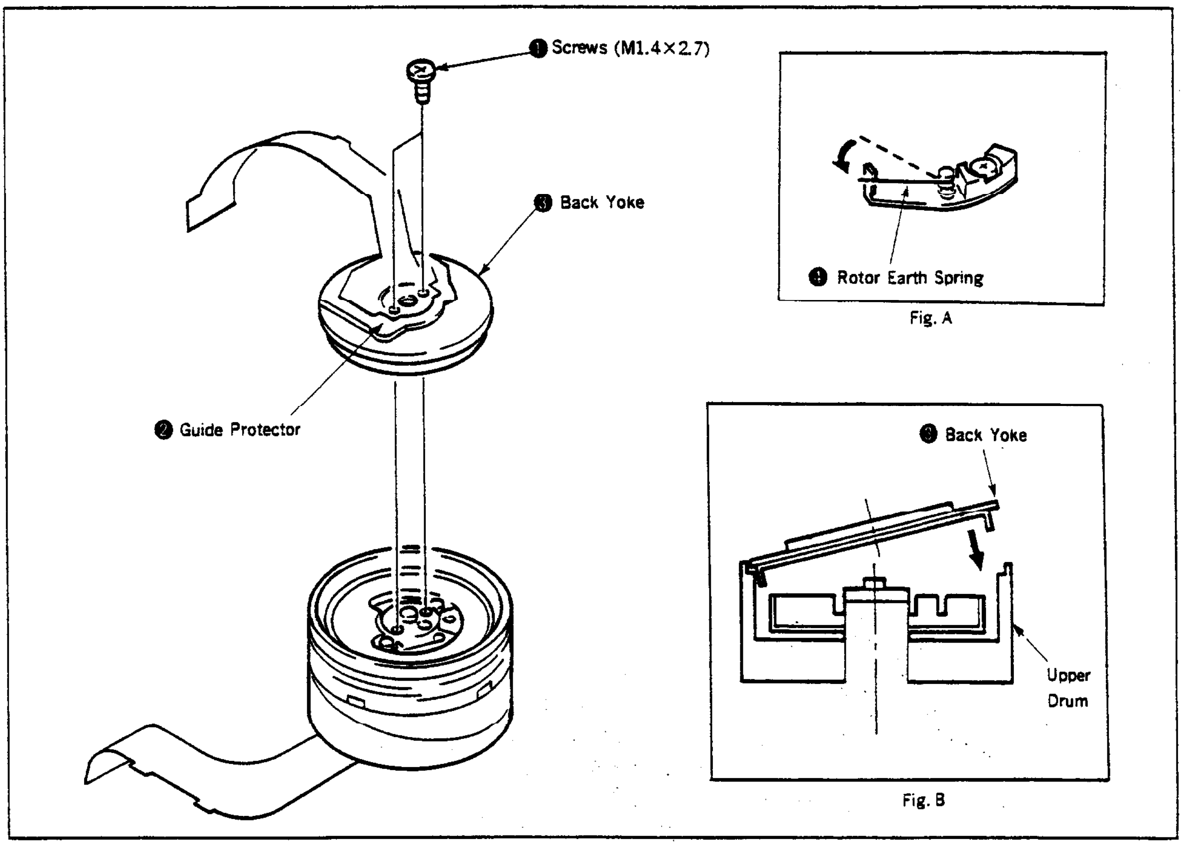

❶ Screws (M1.4×2.7)
❸ Back Yoke
❷ Guide Protector
❹ Rotor Earth Spring
❸ Back Yoke
Upper Drum

Fig. A

Fig. B

Fig. 44

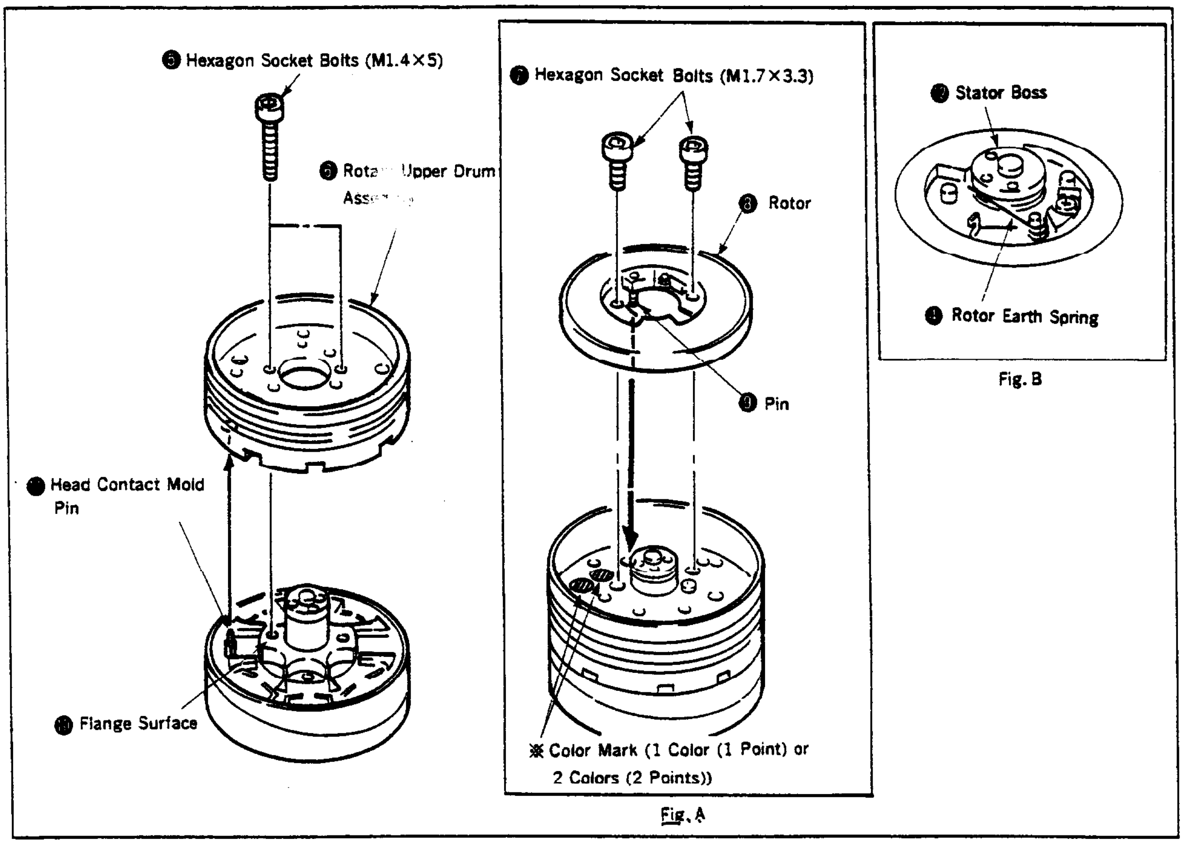

❺ Hexagon Socket Bolts (M1.4×5)
❻ Rotary Upper Drum Assembly
⓫ Head Contact Mold Pin
❿ Flange Surface
❼ Hexagon Socket Bolts (M1.7×3.3)
❽ Rotor
❾ Pin
※ Color Mark (1 Color (1 Point) or 2 Colors (2 Points))
⓬ Stator Boss
❹ Rotor Earth Spring

Fig. A

Fig. B

Fig. 45

5 REEL TABLE HEIGHT CHECK (Fig. 46)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-1, remove the LED base.

Check

Using slide calipers, etc., check that distances from the LS chassis to the S reel table reel resting surface ❷ and T reel table reel resting surface ❸ are ~~3.2±0.5mm~~ respectively.

3. Mounting

1) Referring to 3-1, mount the LED base.
2) Referring to 1-1, mount the cassette compartment holder assembly.

changed values

A: $3.2^{+0.2}_{-0.15}$mm

B: 3.2 ± 0.15mm

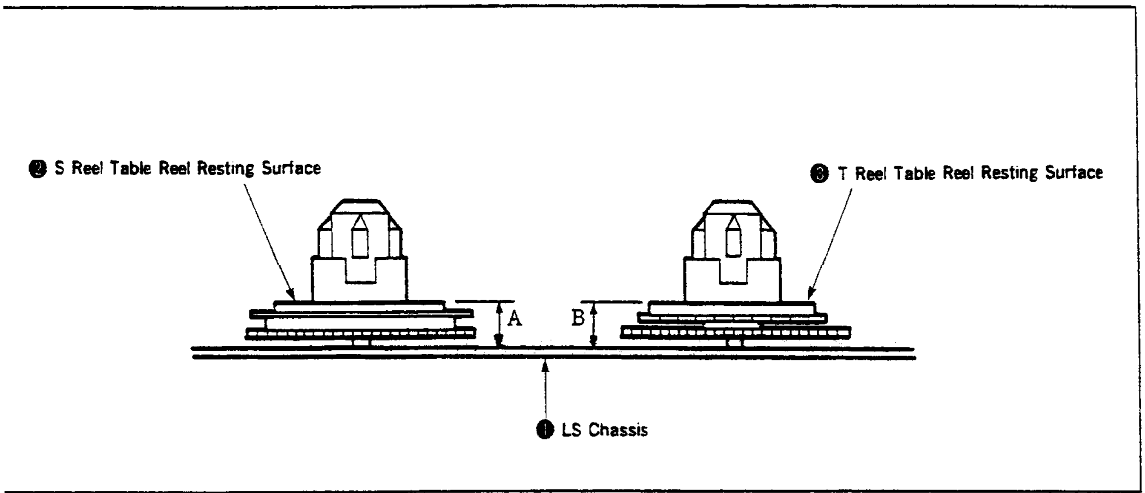

❷ S Reel Table Reel Resting Surface
❸ T Reel Table Reel Resting Surface
A
B
❶ LS Chassis

Fig. 46

6 FWD/RVS TORQUE CHECK

Set the FWD/RVS take-up torque cassette (Ref. No. J-10).

In the FWD mode, check that a T reel torque value is ~~6g•cm — 16g•cm~~ ☛ **changed value** 5 – 15g•cm.

Turn on the REC/REVIEW button and check that an S reel torque value is 25g•cm – 45g•cm.

When the values above are not met, replace the respective reel tables.

3-27 TENSION REGULATOR POSITION ADJUSTMENT

1. Removal

1) Referring to 1-1, remove the cassette compartment holder.

2. Adjustment

1) Set a cassette tape, select the REC mode and run the tape. (Refer to 1-3)
2) With the tape running, check that the distance between TG-1 and TG-2 is ~~9.58 ± 0.2mm.~~ (Fig. 47)
3) When they are not at specified positions, remove the cassette and go through the steps 4) on.
4) Referring to 3-1, remove the LED base.
5) Loosen the screw ❶.

changed value

9.35 – 10.7mm.

6) When TG-1 is located inside (or outside) its specified position, shift the TG-1 adjustment block 2 slightly in a direction of the arrow Ⓐ (or Ⓑ) and fix with the screw ❶. (Fig. 48)
7) Referring to 3-1, mount the LED base.

Note : Use the cassette tape after feeding the tape as far as a middle point.

Note : When taking the steps 4) and 5), remove the cassette tape first.

Note : Check that TG1 is able to move in direction C during REC.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.

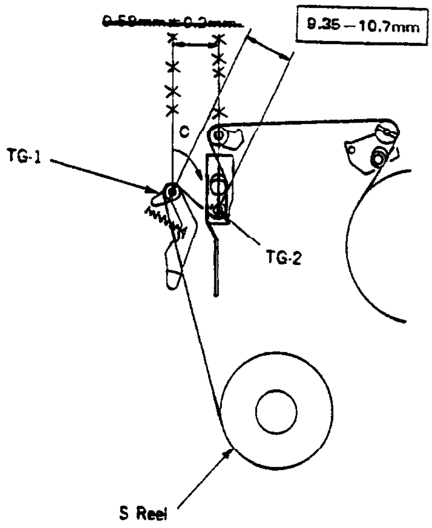


Fig. 47

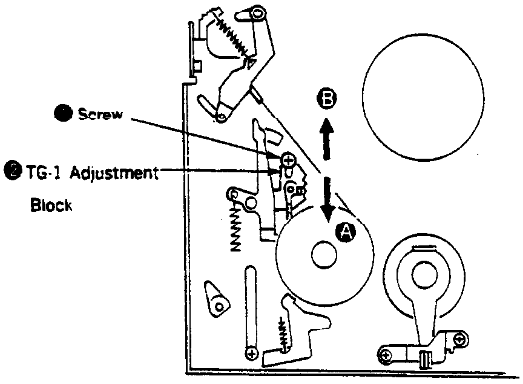


Fig. 48

3-28 FWD BACK TENSION ADJUSTMENT (Fig. 49)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-7, remove the LED base.

2. Adjustment

1) Select the [REC] mode.
2) Set the tension measurement reel (Ref. No. J-8)●.
3) Using the dial tension gauge (Ref. No. J-7)●, measure a tape tension at the outlet of TG-2. When this is done, pull the tape at a rate of 14mm/sec.
4) Change the position of the tention regulator spring ● position as shown in Fig. A so that measure center value of the tention is 4 g-6.5g.

Note : When this is done, see to it that the gear ● is not engaged with the S reel table.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.
2) Referring to 3-1, mount the LED base.

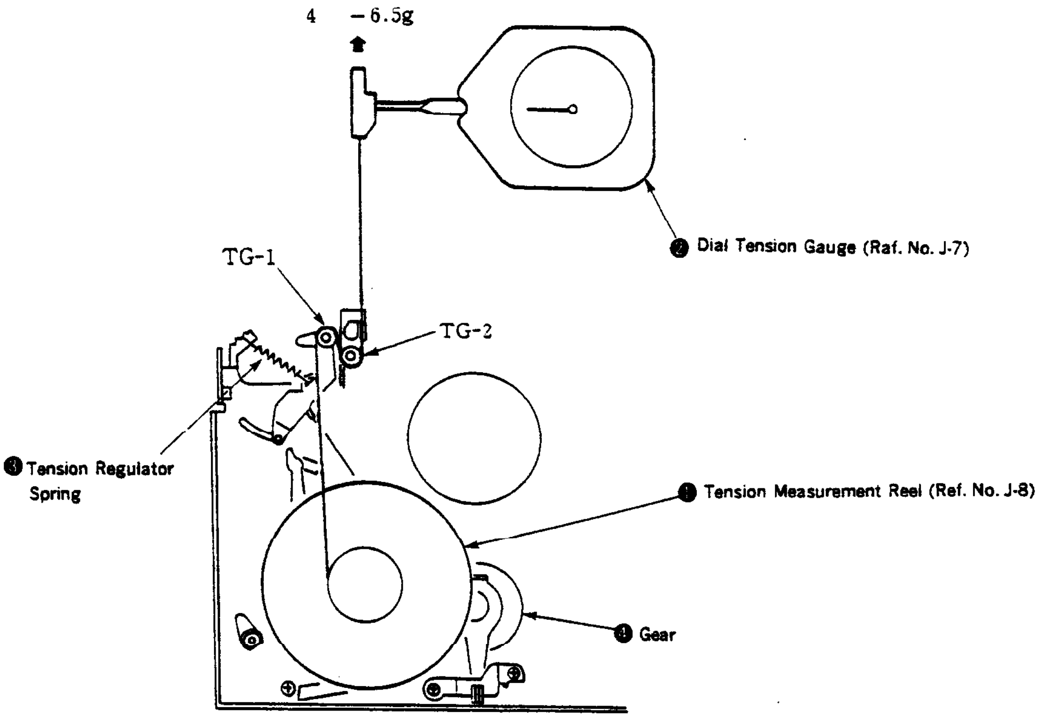

4 -6.5g
● Dial Tension Gauge (Raf. No. J-7)
TG-1
TG-2
● Tension Regulator Spring
● Tension Measurement Reel (Ref. No. J-8)
● Gear

Fig. A

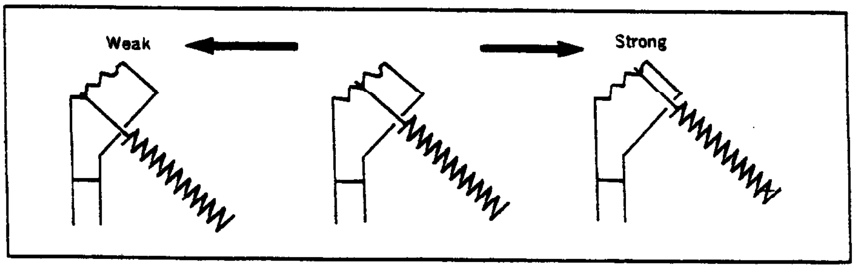

Weak
Strong

Fig. 49

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF system automatically corrects it, which means that perfect adjustment cannot be done.

To avoid this problem, a track shift jig had been used to adjust the tape path system. In the FL (Q) mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode. So, fine tracking adjustment can be easily done.

No track shift jig is required any more.

Example) For CCD-V11/V88

CN404

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The path mode is set by shorting the pins ① and ④.

4-1 PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller). (Fig. 51)
2) Set the PATH mode by shorting the $\overline{\text{TEST}}$ pins (CN404 pins ① and ④ for CCD-V11/V88).
3) Connect to an oscilloscope.
4) Play back a tracking alignment tape (NTSC: WR5-1N), (PAL: WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope. (Fig. 50 ⓐ)
   When it is not flat, make adjustment in accordance with the procedures below.
   When the RF waveform is not flat at the inlet/outlet; (Fig.50 ⓑ and ⓒ)

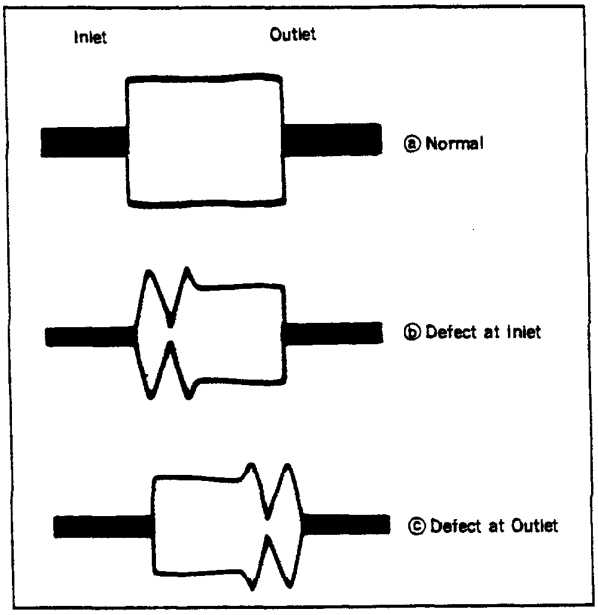

Inlet
Outlet
ⓐ Normal
ⓑ Defect at Inlet
ⓒ Defect at Outlet

Fig. 50

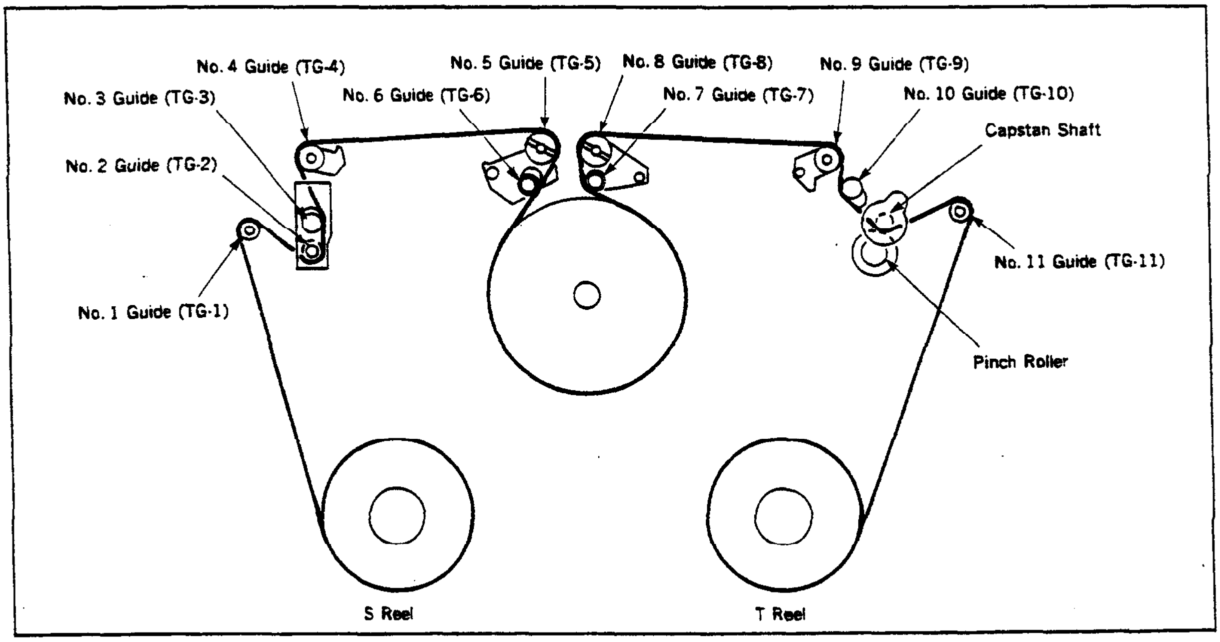

No. 4 Guide (TG-4)
No. 5 Guide (TG-5)
No. 8 Guide (TG-8)
No. 9 Guide (TG-9)
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
No. 7 Guide (TG-7)
No. 10 Guide (TG-10)
Capstan Shaft
No. 2 Guide (TG-2)
No. 11 Guide (TG-11)
No. 1 Guide (TG-1)
Pinch Roller
S Reel
T Reel

Fig. 51 Tape Guides Location

4-2 TRACKING ADJUSTMENT (Fig. 52)

1) Play back the tracking alignment tape.
2) Loosen the No. 5 guide (TG-5) lock screw ● and turn the No. 5 guide to flatten the waveform at the inlet.
3) Tighten the No. 5 guide (TG-5) lock screw ● to lock the No. 5 guide.
4) Loosen the No. 8 guide (TG-8) lock screw ● and turn the No. 8 guide to flatten the waveform at the outlet.
5) Tighten the No. 8 guide (TG-8) lock screw ● to lock the No. 8 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

Tape path Adjustment for "Guide Rail Base 2 with TG8 Gate Adjustment"

You do not have to adjust theTG-8 gate adjustment screw.

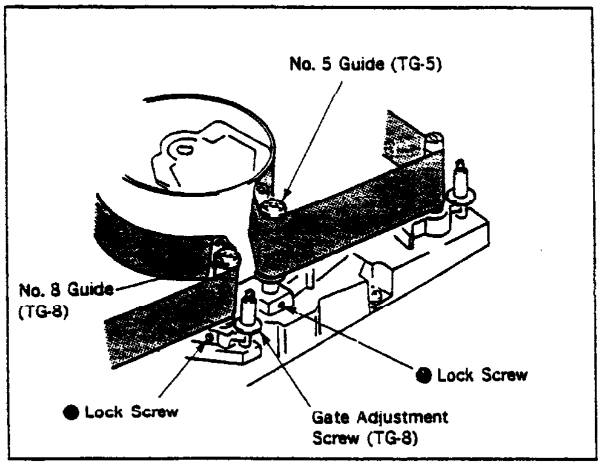


Fig. 52

4-3 NO. 4 GUIDE (TG-4) ADJUSTMENT

When an entire guide base is replaced, its height has been preste.

TG-4 Guide Height Presetting

1) With the top surface of the TG-4 guide leveled, rotate an upper flange by one turn. This is a preset height.

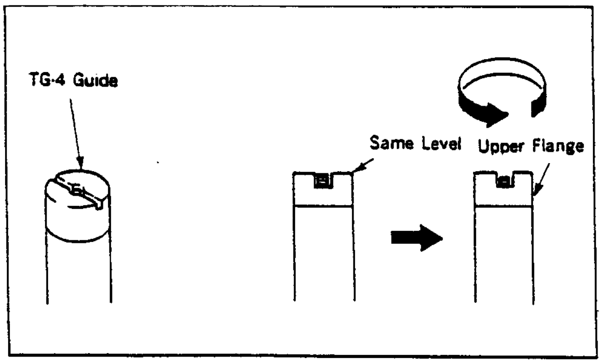


Fig. 53

No. 4 Guide (TG-4) Adjustment

1) Play back the tracking alignment tape.
2) In the FWD mode, check that the tape runs along a TG-4 lower flange. When there is a clearance, turn TG-4 counter-clockwise to put the tape along the TG-4 lower flange. turning angle must be within 180°.
When this is done, check that a tracking waveform (Fig. 54) is not changed.
When a tracking waveform inlet is downward as shown in Fig. 55, make tracking adjustment at the inlet side by raising a height of TG-4.

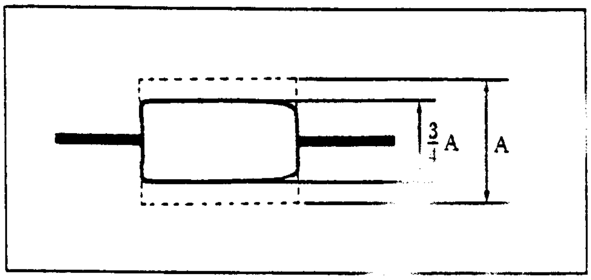


Fig. 54

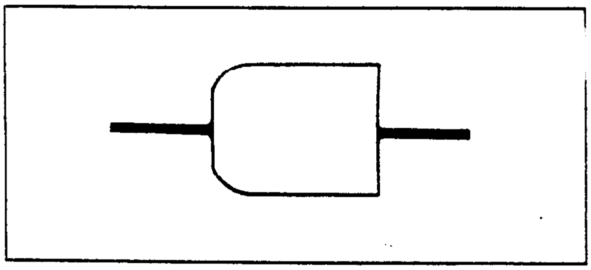


Fig. 55

Tape Path Adjustment for "Guide Rail Base 1 with TG4 Gate Adjustment" (Fig. 56)

After adjusting an inlet, when the TG-4 lower flange is curled in the REV mode, turn the TG-4 gate adjusting screw at pitches of 45° to the left to remove a curl. (A lock screw is attached to the TG-4 gate adjusting screw. First, loosen the lock screw a little, and then, turn the gate adjusting screw. After adjustment, tighten the lock screw.)

If the TG-4 gate adjusting screw is turned to the left too much, the TG-2 upper flange (arrow-indicated part in the figure above) is greatly curled. If it happens, turn the screw to the right.

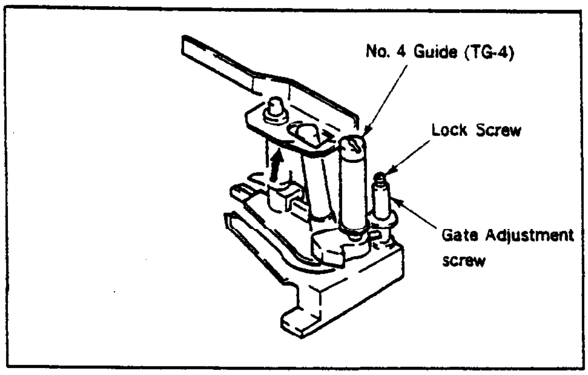


Fig. 56

4-4 NO. 11 GUIDE (TG-11) ADJUSTMENT

1) In the PLAY BACK mode, check that it has no deflection between the capstan and No. 11 guide (TG-11).
   (Criterion: 0.5mm or less)
   when the tape is deflected, turn the No. 11 guide (TG-11) to remove its deflection. (Fig. 57)
2) Select the REV mode and check the RF waveform at the outlet side. (Fig. 58)
3) If the waveform is defective, turn the TG-11 nut counterclockwise by 90° and recheck 2), 3) and 4).
4) Apply screw lock to the No. 11 guide (TG-11).

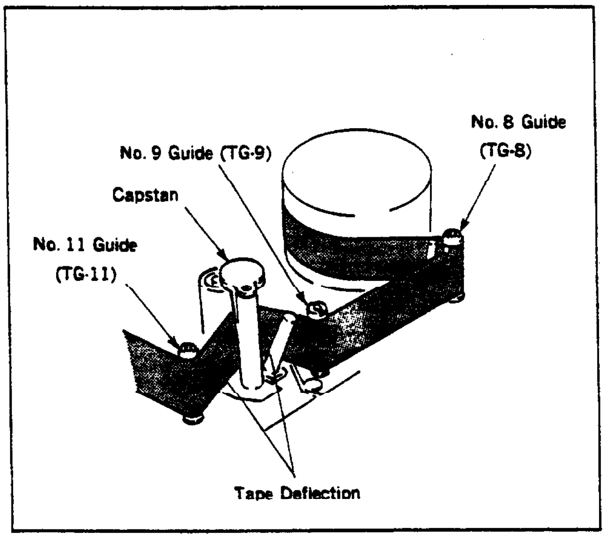

No. 8 Guide
(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide
(TG-11)
Tape Deflection

Fig. 57

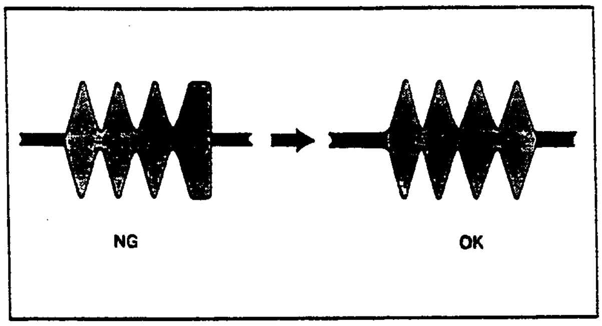


Fig. 58

4-5 CHECK AFTER ADJUSTMENT

1. Tracking Check

1) Play back the tracking alignment tape. In the PATH mode, shift a track. (Fig. 59)
2) At this time, check that a minimum amplitude value (E_{MIN}) is 67% or more of a maximum amplitude value (E_{MAX}). (Fig. 60)
3) Make sure that the waveform does not fluctuate greatly. (Fig. 61)

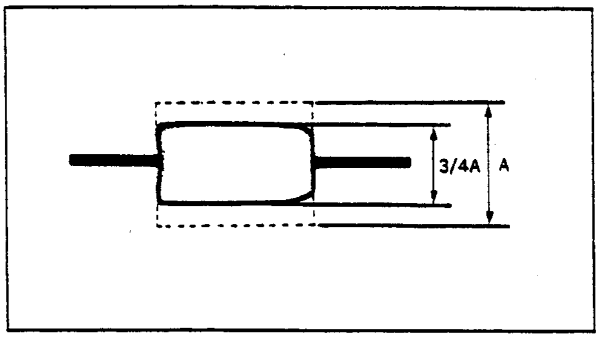


Fig. 59

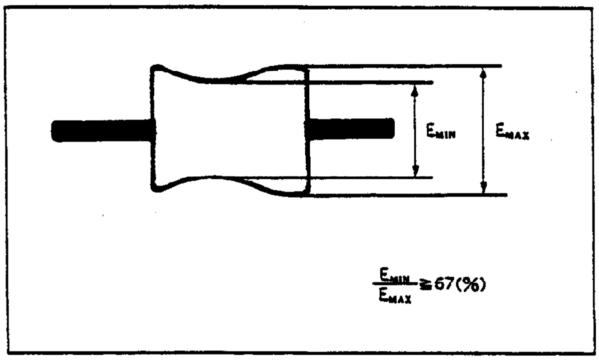


Fig. 60

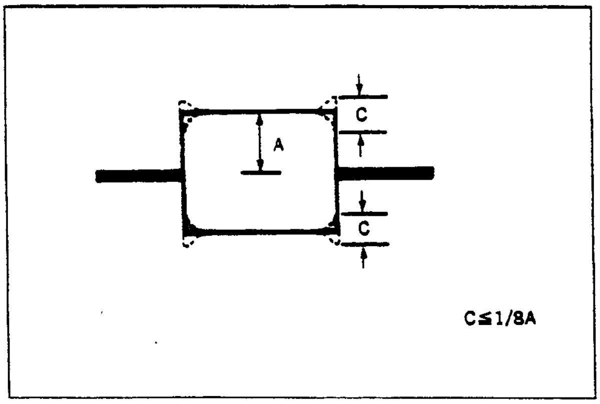


Fig. 61

2. CUE, REV Check

1) Play back the tracking alignment tape and select the REV mode. At this time, waveform peak pitches must be unform. (Fig. 62 ⓐ) When they not uniform, make tracking adjustment in 4-2 and No. 11 guide (TG-11) adjustment in 4-4.
2) Select the CUE mode. At this time waveform peak pitches must be uniform. (Fig. 62 ⓑ) When not uniform, make tracking adjustment in 4-2.

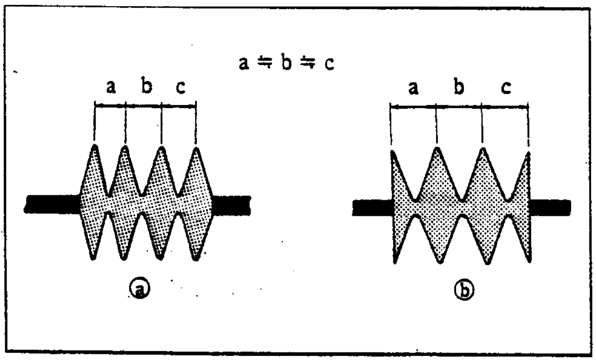


Fig. 62

3. Rise Check

1) Play back the tracking alignment tape.
2) In the PLAY BACK mode, check that the RF waveform rises horizontally within one second. At this time, check also that the tape is not deflected around the pinch roller. (Fig. 63)
3) Play back the tape after CUE/REV and FF/REW operation and check that the RF waveform rises horizontally within one second. At thistime, check also that the tape is not deflected around the pinch roller.
4) Repeat the checks in 2) and 3).

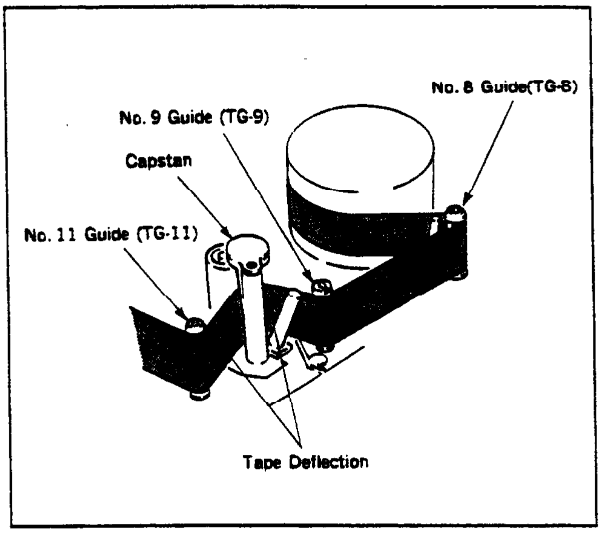

No. 8 Guide(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide (TG-11)
Tape Deflection

Fig. 63

4. Tape Running Check

In the CUE and REV modes, check that the TG-2 upper and lower flanges, TG-4 lower flange, TG-5 upper flange, TG-8 upper flange and TG-11 upper and lower flanges are not culed greatly. (Fig. 63)

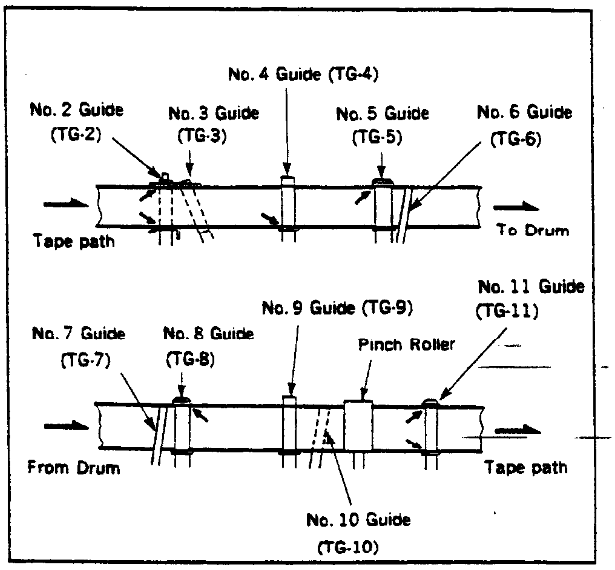

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
No. 6 Guide (TG-6)
Tape path
To Drum
No. 11 Guide (TG-11)
No. 9 Guide (TG-9)
No. 7 Guide (TG-7)
No. 8 Guide (TG-8)
Pinch Roller
From Drum
Tape path
No. 10 Guide (TG-10)

Fig. 64